The New England Journal of Medicine

Formerly The Boston Medical and Surgical Journal
Established 1828

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NEW ENGLAND POSTGRADUATE ASSEMBLY—OCTOBER 31 AND NOVEMBER 1

Program on pages x and xi

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NEW ENGLAND POSTGRADUATE ASSEMBLY
Sanders Theatre, Cambridge, October 31 and November 1

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New England Postgraduate Assembly

Sponsored by the Massachusetts, New Hampshire, and Rhode Island Medical Societies, the Maine Medical Association and the Vermont State Medical Society

October 31 and November 1

Sanders Theatre, Harvard University, Cambridge, Massachusetts

Every doctor in New England is cordially invited to attend the second New England Postgraduate Assembly The speakers are all prominent educators as well as successful practitioners in their chosen fields of medicine This is an unusual opportunity for New England physicians to obtain the latest and best information in regard to the diagnosis and treatment of a variety of diseases The list of guest speakers is as follows

Dr Jesse G M Bullowa, New York City

Clinical professor of medicine, New York University College of Medicine, visiting physician, Harlem Hospital and Willard Parker Hospital

Dr Benjamin W Carey, Detroit, Michigan

Assistant professor of pediatrics, Wayne University College of Medicine, bacteriologist, Children's Hospital of Michigan.

Mr H H Clegg, Washington, District of Columbia

Assistant director of the Federal Bureau of Investigation, United States Department of Justice, Washington, District of Columbia

Dr Eldridge L Eliason, Philadelphia

John Rhea Barton Professor of Surgery, University of Pennsylvania Medical School, professor of surgery, University of Pennsylvania Graduate School of Medicine, surgeon, Presbyterian and Philadelphia General hospitals

Dr Albert C Furstenberg, Ann Arbor, Michigan

Professor of otolaryngology and dean, University of Michigan Medical School

Dr Roscoe R Graham, Toronto, Ontario

Assistant professor of surgery, University of Toronto Faculty of Medicine, senior surgeon, Toronto General Hospital

Dr Charles C Higgins, Cleveland, Ohio

Surgeon, Cleveland Clinic.

Sir Thomas Lewis, Rickmansworth, England

Director, Department of Clinical Research, Medical Research Council, University College Hospital Medical School, London

Dr Harvey B Matthews, Brooklyn, New York

Clinical professor of obstetrics and gynecology, Long Island College of Medicine, attending obstetrician and gynecologist, Long Island College and Methodist hospitals, chief and attending in obstetrics and gynecology, Caledonian Hospital, director, Department of Obstetrics, Coney Island Hospital

Dr James S McLester, Birmingham, Alabama

Professor of medicine, University of Alabama School of Medicine, physician in-chief, Hillman Hospital

Dr Joseph Earle Moore, Baltimore

Associate in medicine, Johns Hopkins University School of Medicine, physician in-charge, Syphilis Division, Johns Hopkins Hospital, special consultant, United States Public Health Service and Maryland State Department of Health

Dr Maurice C. Pincoffs, Baltimore.

Professor of medicine, Department of Medicine, University of Maryland Medical School

The New England
Journal of Medicine

VOLUME 221 JULY 13, 1939 NUMBER 2

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ALCOHOLISM AT THE BOSTON CITY HOSPITAL

I The Admission of Alcoholic Patients to the Haymarket Square Relief Station, With an Estimate of the Cost of Their Care, 1927 1937*

MERRILL MOORE, M.D.,† AND M GENEVA GRAY, PH.D ‡

BOSTON

FOR maoy years the Boston City Hospital has done more than any other iostitution in the community toward caring for acutely ill or injured citizens. Its several departments have grown and operated in the face of changiog social conditioos and varying public needs From a very small beginning in 1864 it has developed to its present size of 2508 beds, and stands today as one of the largest general bospitals in the Uoited States In 1938 it admitted 42,750 patients to its wards and was visited by 95,275 outpatients No department of this large tax supported institution has io recent years more effectively carried its share of this medical burden than the Haymarket Square Relief Statioo, which was opened in 1902 and closed in March, 1938, as a necessary economy measure. As a branch of the hospital, in the course of some years, it received and cared for as many as 1400 persons annually who were sufferiog from various stages of physical disability associated with the excessive use of alcohol.

TABLE I *Annual Admission Rates*

YEAR	SEX	OUTPATIENTS TREATED	HOUSE PATIENTS ADMITTED	TOTAL PATIENTS	CHRONIC ALCOHOLIC PATIENTS TREATED	ALCOHOLIC HOUSE PATIENTS ADMITTED	TOTAL ALCOHOLIC PATIENTS	ALCOHOLIC OUT PATIENTS %	ALCOHOLIC HOUSE PATIENTS %	TOTAL ALCOHOLIC PATIENTS %
1927	M	17,358	2,303	19 661	245	732	977	1 41	31.35	4.96
	F	7 090	344	7 434	13	25	38	0.18	7.58	0.51
1928	M	17,519	2,259	19 778	247	717	964	1 40	31.73	4.87
	F	7,156	337	7 493	13	28	41	0.18	8.30	0.54
1929	M	18,089	2,111	20,200	286	574	860	1.58	27 19	4.25
	F	7,389	315	7 704	10	17	27	0.13	5.39	0.35
1930	M	18,759	1,978	20,737	347	467	814	1.84	23.60	3.92
	F	7,662	295	7,957	10	20	30	0.13	6.77	0.37
1931	M	20 420	1,946	22,366	303	622	925	1 48	31.96	4 13
	F	8,340	291	8,631	19	35	54	0.22	12.02	0.62
1932	M	21 135	1,623	22,758	343	510	853	1.62	31 42	3 74
	F	8,632	242	8,874	13	28	41	0.15	11.57	0 46
1933	M	21 605	1,621	23,226	405	530	935	1.87	32.60	4.02
	F	8 825	242	9 067	19	40	59	0.21	16.11	0.65
1934	M	22,133	1 655	23 788	459	627	1,077	2.03	37.87	4.52
	F	9,040	247	9,287	30	53	83	0.33	21 45	0.89
1935	M	22,486	1 638	24 124	382	675	1,057	1.69	41.20	4.38
	F	9 184	245	9 429	23	54	77	0.25	22.04	0.81
1936	M	21,836	1 280	23 116	547	732	1,279	2.55	57 19	5.53
	F	8,919	191	9 110	25	70	95	0.28	36.64	1.04
Totals	M	201,340	18 414	219 754	3,535	6,186	9 41			
	F	82,237	2,749	84,986	175	370	545			
Averages	M							1.26	33 59	4 43
	F							0.21	13 45	0 64
Grand totals		283,577	21 163	304 740	5,730	6,556	10,286			
Grand averages								1.31	30.97	3.37

In order to obtain the information reported in this survey, approximately 40,000 case records of patients admitted from 1927 to 1937 were examined so as to learn the incidence of alcoholism among all admissions to the Haymarket Square Relief Station Approximately 10,000 cases were found to be alcoholic, and these form the material of this study In spite of possible errors, the records

From the Neurological U It of the Boston City Hospital and the Department of Diseases of the Nervous System of the Harvard Medical School.

This study was completed in part with the assistance f Works Progress Administration Project (Numbers 6148-1047 and 14667) for the Study of Alcoholism at the Boston City Hospital, 1936–1938

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are considered sufficiently accurate to warrant some conclusions

Between 1927 and 1937 there were treated at the relief station a total of 304,740 patients—219,754 were men and 84,986 women By far the largest number of these, 283,577, were outpatients,—201,340 men and 82,237 women (Table 1) The patients admitted to the wards numbered 21,163, and of these 18,414 were men and 2749 women This represents an average of about 2116 house patients annually, although in the first two years of the period reported the number was much larger than the average, and in the latter years there was a steady decrease This gradual decrease of admissions to the wards was accompanied by a correspondingly gradual, although irregular, rise in the number of outpatients The average ratio of men to women among outpatients was approximately 2 5 1 0 and among house patients approximately 7 1

Between 1927 and 1937, 3730 alcoholic patients were treated in the outpatient department, and 6556 were admitted to the wards, a total of 10,286 cases Of the 3730 alcoholic outpatients, 3555 were men and 175 were women, while of the 6556 alcoholic ward patients 6186 were men and 370 women Among all alcoholic patients admitted to the relief station, men outnumbered women in the ratio of 18 1

In the outpatient group (Table 1), men with alcoholism represented 1 8 per cent and women 0.2 per cent for the ten-year period Men with alcoholism constituted 33 6 per cent of all male house patients, and the women with alcoholism 13.5 per cent of all female house patients Alcoholic outpatients of both sexes made up 1.3 per cent of all outpatients, and alcoholic house patients of both sexes made up 31 0 per cent of all house patients Alcoholic patients of each sex compared with all patients admitted represented 4 4 per cent of the men and 0 6 per cent of the women The totals of both sexes compared with all patients admitted represented 3 4 per cent Average annual visits to the outpatient department were made by 373 alcoholic patients, compared with visits by 28,358 outpatients in all

Length of Stay

The majority of the house patients referred to above required care for one day or less (Table 2) The annual variation between 1927 and 1937 shows that the minimum number of patients receiving house care for one day was 456 in 1930 and 720 in 1936 The average was 545 An annual average of 25 patients required hospital care for two days, and 7 required care for three days The maximum stay was twenty-six days The total patient-days per year varied between 568 in 1930 and 999 in 1936, or a yearly average of 761 Outpatient visits for alcoholism varied from 258 in 1927 to 572 in 1936 This increase was quite regular and sustained, the yearly average was 374 From 487 to 802 individuals were treated annually as house patients, including repeaters The average number of alcoholic house patients admitted annually was 656, and that of both alcoholic house and outpatients was 1029

TABLE 2 *Length of Stay of Patients with Alcoholism*

YEAR	NO OF PATIENTS TREATED FOR THE DESIGNATED NO OF DAYS																						TOTAL PATIENT DAYS	TOTAL NUMBER HOUSE PATIENTS TREATED	OUT PATIENT VISITS	TOTAL NUMBER PATIENTS TREATED
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	18	19	20	21	23	24	26				
1927	709	30	8	2	5		1		1					1										856	757	258	1 015
1928	692	32	10	1	2	1	1	1	1		1					1							2	909	745	260	1 005
1929	557	23	6	1	3					1														650	591	296	887
1930	456	23	4	1										1			2							568	487	357	844
1931	624	22	4	3		1		1									1				1			747	657	322	979
1932	500	24	5	2		1		1		2			1							1				1	663	538	356	894
1933	535	20	5	4	1	3													1	1				670	570	424	994
1934	670	7	1		1																			711	680	480	1 160
1935	689	20	9	3	2		3	1				1								1				840	729	405	1 134
1936	720	51	17	6	1	1	1	1	1	1					1					1				999	802	572	1,374
Averages	545																							761	656	374	1 029

TABLE 3 *Ratio of Alcoholic Patients to All Patients Treated*

YEAR	TOTAL PATIENTS TREATED	ALCOHOLIC PATIENTS TREATED	ALCOHOLIC PATIENTS %
1927	27 095	1 015	3 74
1928	27 271	1 005	3 64
1929	27,904	887	3 18
1930	28 694	844	2 94
1931	30 997	979	3 16
1932	31 632	894	2 82
1933	32 293	994	3 07
1934	33 075	1 160	3 50
1935	33 553	1 134	3.37
1936	32 226	1,374	4 27
Totals	304 740	10 286	
Average			3.37

Ratio of Alcoholic to Non-Alcoholic Patients

Alcoholic patients (both house and outpatient) for the period studied represented from 2 82 per

cent of all patients in 1932 to 4.27 per cent in 1936 (Table 3) The annual average percentage was 3.37 These figures are apparently not significant unless the purpose of the relief station is considered, as well as the fact that the averages represent only cases in which alcoholism was the presenting problem, and do not show the additional large group in which alcoholism accompanied other and more serious conditions

Cost of Care of Alcoholic Patients

The cost of hospital care varied with general economic conditions For all outpatient visits, the lowest cost per visit reported was $1.89 during 1934 and the highest was $2.84 during 1930 (Table 4) The cost of treating outpatients for alcoholism is the product of the number of outpatient visits and the average cost per visit The annual total cost ranged from $665.64 in 1927 to $1206.92 in 1936 The average annual cost in the outpatient department was $868 64 When the number of patient-days in the house is multiplied by the cost per day the total cost for house patients is obtained The annual cost of care for alcoholic house patients ranged from $3108.80 in 1933 to $5334.66 in 1936, with an average of $3790 68 The total annual cost of treating all alcoholic patients ranged from $3952.56 in 1933 to $6541.58 in 1936, with an average annual cost of $4659.32

Relation of Cost of Treating Alcoholic Patients to Total Expenditures

It is of interest to note that between 4.5 per cent (1930) and 8 0 per cent (1936) of the total cost of maintaining the Haymarket Square Relief Station between 1927 and 1937 was necessitated by the care of alcoholic patients, the average being 5.6 per cent (Table 5) This percentage, as compared with the ratio of alcoholic to noo alcoholic admissions, is almost twice that warranted by the number of alcoholic patients This is especially significant io view of the relatively short stay of the majority and the high number of outpatients during the period studied *

DISCUSSION

The above figures are presented as part of a cross-sectional picture of alcoholism based on the records of the Haymarket Square Relief Statioo Because of the extremely large number of out patients treated for all conditioos, the ratio of alcoholic to non-alcoholic patients is apparently not high However when it is seen that 30 per cent of all house patients were sufferiog from alcoholism, the figures assume larger significance. It was not possible to obtain identical data from the Boston City Hospital proper, owing to the vast number of admissions (over 1 000 000) but it has been previously shown[1] that the alcoholic admis

TABLE 4 *Cost of Treating Alcoholism*

YEAR	PER CAPITA COST OF OUTPATIENT VISITS PER VISIT	NUMBER OF OUTPATIENT VISITS	TOTAL COST OF OUTPATIENT TREATMENT	PER CAPITA COST OF HOUSE PATIENTS PER DAY	TOTAL HOUSE PATIENT DAYS	TOTAL COST OF HOUSE TREATMENT	TOTAL COST OF TREATMENT
1927	$2.58	258	$665.64	$4.25	856	$3,638.00	$4,303 64
1928	2.70	260	70..00	4 57	909	4 154 13	4,856 13
1929	2.77	296	819.92	5.21	650	3,386.50	4 206 42
1930	2.84	357	1 013.88	5.34	568	3 146 72	4 160 60
1931	2.67	322	859 4	5.39	47	4,026.33	4 886.07
1932	2.34	356	833.04	4 75	663	3 149.25	3,982.29
1933	1.99	4 4	843 6	4 64	670	3 108.80	3,952.56
1934	1.89	480	907.20	4.89	711	3 476.79	4,383.99
1935	2.06	405	834.30	5.34	849	4 485.60	5,319 90
1936	2.11	572	1 206.92	5.34	999	5,334.66	6,541.58
Totals		3,730	6 686.40		7 613	37,906.78	46,593 18

TABLE 5 *Ratio of Cost of Treating Alcoholic Patients to Annual Budget*

YEAR	ANNUAL BUDGET HAYMARKET SQUARE RELIEF STATION	COST OF TREATING ALCOHOLIC PATIENTS	PERCENTAGE OF ANNUAL BUDGET
1927	$79,899 84	$4,303.64	5.39
1928	84 686.00	4 856 13	5.73
1929	89 133 66	4,206.42	4 72
1930	9..819.30	4 160.60	4 45
1931	93,344 84	4 856.0	5.23
1932	86,997 32	3 982.29	4 58
1933	4,043 18	3 95 36	5.34
1934	4,945.00	4,383.99	5.93
1935	8..076 36	5,319 90	6 45
1936	81,316 03	6 541.58	8 04
Totals	$839,251 62	$46 593 18	
Average			5 59

*The per-diem cost of care i the relief station i prorated for all p sen admitted It i on such a basis that the ratio of the cost of care for lcoholic patien to the cost of care of ll pa leans is greater than the ratio of the number of alcoholic p tient to all patients treated

sions to the main hospital have been between 7 and 14 per cent of all admissions Almost no alcoholic outpatients are treated at the main hospital, and so few at the relief station that the total figures appear to be less important than they actually are The patients treated at the relief station represent a distinct social and economic level * It will be increasingly apparent that the conditions reported by no means represent those of the community at large, because many alcoholic patients are cared for privately or in other institutions

In estimating the total cost of alcoholism (acute and chronic) to public agencies the following must be considered

The actual cost of care (in hospitals) for acute and chronic alcoholism
The care of alcoholic patients in mental hospitals over long periods
The court costs required for the penal disposition of alcoholic patients
The maintenance of alcoholic patients in penal institutions such as the Bridgewater State Farm
The loss of income and earning power by the alcoholic patient
The expenditures for relief, welfare and other social complications for the family and dependents of the disabled alcoholic patient

The costs presented in this paper represent only a part of the first item, and must be multiplied many times to show the total cost of alcoholism throughout the Commonwealth Many of the patients represented here as spending only one day in the Haymarket Square Relief Station were transferred almost at once to the Boston City Hospital for much longer stays or to other institutions because of the gravity of their condition

The immediate care of acute alcoholic patients represents the minimal part of the total cost of alcoholism to the City of Boston and the Commonwealth It becomes apparent that a medical problem of this magnitude requires new methods of treatment and a new plan for dealing with those so addicted

Preventive medicine must play a prominent role in the execution of any program for meeting this problem In the Boston Municipal Court specific penological measures are being applied in the hope of decreasing the number of repeaters who appear before the bar Physicians, having accepted alcoholism as a medical problem, must apply the best technics at their disposal to the treatment of alcoholism as they have done for other endemic problems The data presented here serve to demonstrate that there is no appreciable decline in the incidence or cost of alcoholism following symptomatic treatment It has been repeatedly shown that the basic problems of the individual alcoholic patient are psychological and social rather than physical (Fleming,[2] Seliger,[3] Tillotson and Fleming[4]) Symptomatic and emergency treatment of alcoholism is not sufficient, and social and psychotherapeutic technics must be included

The attitude of one commentator on a similar situation cannot be shared without qualification Salinger,[5] writing of conditions in Germany in 1928, deplored the cost to the taxpayers of mental-hospital treatment for alcoholic patients He pointed out that the law allowed incarceration of drunkards who fail in their economic obligations, and recommended that they be put in workhouses, where the treatment should take the form of labor suitable to the individual Treatment in mental hospitals was not believed by him to lead to cures and was considered an unjustifiable expense

Certainly any plan for the treatment of alcoholism which does not give due attention to prevention is fundamentally unsound The present method of routine care for acute alcoholic patients has failed to lower the incidence and cost in one department of the Boston City Hospital The outstanding need in Boston is not for more facilities for the treatment of chronic alcoholic patients while acutely intoxicated It is rather for means by which the alcoholic patient can be studied as an individual, the possibility for his reclamation evaluated and psychiatric treatment made available where it seems to provide promise of worthwhile results Provision for this treatment under medical supervision is not a serious risk where important improvement may result Along with tuberculosis and syphilis, alcoholism can today be classed among the major problems in public health

SUMMARY

The annual admissions of alcoholic and non-alcoholic patients to the Haymarket Square Relief Station from 1927 to 1937 are reported Of 304,740 patients treated during that time, 10,286 were suffering from alcoholism

Most of the alcoholic admissions were to the wards — almost twice the number treated in the outpatient department

Among all alcoholic patients, the ratio of men to women was 18 1

Alcoholic patients constituted 33 6 per cent of all male house patients, and 13.5 per cent of all female house patients

Partly because of the limited number of alcoholic patients treated as outpatients, the total num-

*Data concerning this phenomenon are reported in subsequent papers

ber (both sexes) represented only 3·4 per cent of all patients admitted

The average length of stay was one day and the maximum stay of any alcoholic patient was twenty six days

The cost per day of house care averaged $4.98 per patient. The annual average cost of treating alcoholic outpatients was $868.64 and that of treating alcoholic house patients was $3790 68, a total of $4659.32. This represents nearly 6 per cent of the total expenditure for the relief station.

The inadequacy of present methods of caring for alcoholic patients is discussed

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ALCOHOLISM AT THE BOSTON CITY HOSPITAL

II. Conditions on Hospitalization of All Alcoholic Patients at the Haymarket Square Relief Station, 1923-1938*

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BOSTON

ALTHOUGH the alcoholic patients treated at the Haymarket Square Relief Station of the Boston City Hospital from 1923 to 1938 were drawn from many communities, their conditions on hospitalization were not so varied as might be expected. Men greatly outnumbered women among the 16,054 persons in this group. There were 15,229 men (94.6 per cent) and 825 women (5·4 per cent) treated on the wards of the relief station and in the outpatient department. Among outpatients there were 5230 men and 261 women. The percentage of men in both outpatient and house groups varied between 97.7 in 1923 and 90.8 in 1936. In the years following the repeal of the prohibition law there was a marked increase in the number of women who required hospital treatment because of alcoholism (from 2.3 per cent in 1926 to 9.2 per cent in 1936).

Age

According to decades, the largest number of patients (26.2 per cent) were in that from forty to fifty. Approximately the same number (25.1 per cent), were from thirty to forty, and 17.8 per cent were from fifty to sixty. Two patients were under nine, both of them Italian boys who had tapped the family wine barrel. Thirty-one men were over eighty and the age of 747 patients was not recorded. The age and sex distribution was the same for the women as for the men.

Marital Status

The majority of men requiring hospital treatment for alcoholism were single. There were 8848 unmarried men (58.0 per cent of all men) and 207 unmarried women (25.0 per cent of all women). Married persons made up the next largest group (men 4695 or 30.8 per cent, women 444, or 53.8 per cent). There were 828 widowers and 11 widows. Forty four men and 8 women had been divorced. The marital status of 806 men and 55 women was unknown.

Color

All but 76 patients were white. There were 62 Negroes, 12 Negresses, and 2 Japanese men. The numbers for the Negroes are greatly disproportionate to the relative number of colored patients admitted annually for other causes, and are also disproportionately small in comparison with the number of Negro residents of Boston.

Birthplace

A total of 4790 patients (4581 men and 209 women) were born in Massachusetts outside of Boston. Approximately the same number, 4730 (4513 men and 217 women) were born in foreign countries. Sixteen hundred and twenty-five patients (1546 men and 79 women) were born in Boston and 1158 (1081 men and 77 women) were born in other states. The birthplace of 3753 (3510 men and 243 women) was not recorded. Of the foreign-born group the largest number were born in Ireland, with Canada, Italy and the British Isles next in order (Table 1).

Of the native-born group the largest number who had been born in Boston were in the decade from thirty to forty at admission. The same was true of those born in Massachusetts outside of Boston. However, those born outside of Massachusetts were mostly in the group from forty to fifty. This was particularly true of the foreign-born group, of these, 1462 men and 59 women were between these ages.

From the Neurological Unit of the Boston City Hospital and the Department of Diseases of the Nervous System of the Harvard Medical School.
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Residence

More than two thirds of the patients were residents of Boston (9881 men and 607 women), 3878 men and 161 women were residents of Massachusetts but not of Boston Four hundred and

TABLE 1 *Birthplace of Foreign Born*

COUNTRY	MEN	WOMEN	TOTAL
Ireland	2 482	119	2 601
Canada	500	46	546
Italy	375	7	382
British Isles	240	17	257
Poland	219	14	233
Sweden	159	0	159
Russia	147	2	149
Newfoundland	104	1	105
Lithuania	61	7	68
Austria and Germany	46	3	49
Norway	48	0	48
Portugal	24	0	24
Finland	24	0	24
Spain	17	0	17
Denmark	15	0	15
France	11	0	11
Greece	6	0	6
Holland	5	0	5
South America	4	0	4
Puerto Rico	4	0	4
Switzerland	4	0	4
Hungary	3	0	3
Mexico	3	0	3
Bermuda	1	1	2
South Africa	2	0	2
Japan	2	0	2
Latvia	1	0	1
Liberia	1	0	1
Costa Rica	1	0	1
Madeira	1	0	1
Esthonia	1	0	1
Guatemala	1	0	1
At sea	1	0	1
Totals	4 513	217	4 730

ninety-six men and 16 women lived in other states, and 12 men and 1 woman lived in other countries Two hundred and seventy-five males were transients or had no local habitation The residence of 564 men and 38 women was unknown Of the Boston residents, the sections nearest the station supplied the largest number of patients (Table 2) The transients were for the most part younger than those in other groups, the largest number in the transient group were in the decade from twenty to thirty, in contrast to the other groups, where the majority were in those from thirty to fifty

TABLE 2 *Residence in Boston*

DISTRICT	MEN	WOMEN	TOTAL
Charlestown	3 134	158	3 292
West End	2 030	187	2 217
South End	1 131	89	1 220
North End	1 169	26	1 195
Roxbury	506	38	544
Dorchester	490	20	510
South Boston	440	27	467
East Boston	374	15	389
Back Bay	178	27	205
Jamaica Plain	135	9	144
Allston	72	8	80
Roslindale	61	0	61
Boston Harbor	43	0	43
Hyde Park	31	0	31
Mattapan	29	0	29
Boston proper	25	2	27
West Roxbury	26	1	27
Neponset	7	0	7
Totals	9 881	607	10 488

Occupation

The occupation was not listed in about one fourth of the cases (4413 men and 309 women) Four thousand six hundred and fifty-three men were laborers, and 2746 men and 477 women were unskilled workers Semi-skilled workers included 1247 men and 13 women Three hundred and eighty-one men and 3 women were office workers above the level of clerks There were 107 professional men and 11 professional women

Methods by Which Admitted and Disposition

Twelve thousand one hundred and fifty-five men and 557 women were brought to the relief station by the police and were presumably unable to walk Two thousand one hundred and ninety-eight men and 229 women came in the ambulance, by taxicab or by private car Eight hundred and seventy-six men and 39 women walked to the relief station unaided Of the group brought by the police, 5628 men and 197 women were eventually released unconditionally One thousand and fourteen men and 81 women were transferred to the main hospital, and 66 men and 5 women to other hospitals Four hundred and thirty-two men and 42 women were discharged against advice One hundred and fifty-three men and 12 women were discharged in the care of friends, and 55 men and 2 women died Four thousand eight hundred and seven men and 220 women were returned to police custody when able to be discharged and were presumably required to appear in court to answer charges

TABLE 3 *Disposition of Patients*

DISPOSITION	MEN	WOMEN	TOTAL
Unconditional release	7 415	349	7 764
To Boston City Hospital	1 494	113	1 607
To other hospitals	93	7	100
To police	5 243	258	5 501
Against advice	692	69	761
To friends	220	26	246
Died	72	3	75
Totals	15 229	825	16 054

Of the group who were brought to the hospital by ambulance or other conveyance, 1280 men and 128 women were released unconditionally, 315 men and 28 women were transferred to the main hospital and 18 men and 2 women were sent to other hospitals Three hundred and thirty-two men and 34 women were discharged to the police, 51 men and 13 women were discharged in the care of friends One hundred and eighty-five men and 23 women were discharged against advice, 17 men and 1 woman died in the hospital Of those who were ambulatory on admission, 507 men and 24 women were discharged unconditionally, 165 men and 4 women were transferred

to the main hospital and 9 men were transferred to other hospitals. One hundred and four men and 4 women were transferred to the police 16 men and 1 woman were released in the care of friends. Seventy five men and 6 women were discharged against advice None of the ambulatory patients died in the hospital.

Length of Stay

The majority of patients required one day or less of treatment (Table 4) Some stayed in the

TABLE 4 *Length of Stay*

LENGTH OF STAY	MEN	WOMEN	TOTAL
1 day	14,238	761	14,999
2 days	641	36	677
3 days	203	16	219
4 days	55	3	58
5 days	23	4	27
6 days	16	0	16
days	10	1	11
More than 7 days	43	4	47
Totals	15,229	825	16,054

hospital longer than one week but by far the greatest number were in the hospital less than three days

Condition on Discharge

Twelve thousand nine hundred and ninety four men and 659 women were relieved of the symptoms of acute alcoholism on discharge The condition of 2163 men and 183 women was the same on discharge as at admission and 72 men and 3 women were dead

Time of Admission

Approximately 7 per cent of all patients were admitted each hour between six in the evening and midnight Between four and nine in the morning less than 1 per cent were admitted each hour (Fig 1)

SUMMARY

The conditions on hospitalization of 15,229 men and 825 women treated at the Haymarket Square Relief Station of the Boston City Hospital from 1923 to 1938 are reviewed

Of 16 054 patients in the group 15,229 were men and 825 were women This represents 94.9 per cent men for the fifteen year period

Twenty six and two-tenths per cent of all patients were from forty to fifty years old, and approximately the same number were from thirty to forty There were 2 boys under nine and 31 men over eighty-one.

Unmarried patients were commonest in this group there being 8848 men (58 per cent of all men) and 207 women (25 per cent of all women) Thirty and eight-tenths per cent of the men and 53.8 per cent of the women were married There

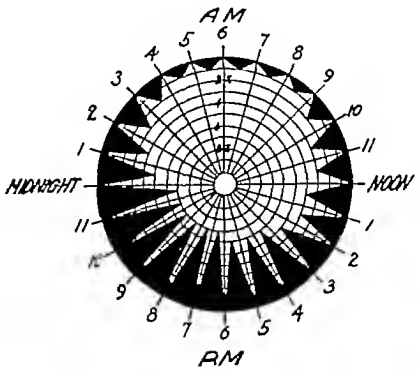

FIGURE 1 *Diagram Showing Time of Admission of 344 Patients with Delirium Tremens to the Haymarket Square Relief Station 1923–1937 (Each ring represents 5 patients)*

were 828 widowers and 11 widows. Forty four men and 8 women had been divorced

There were 62 Negroes and 12 Negresses and 2 Japanese men in the group All others were white persons.

Four thousand seven hundred and ninety persons were born in Massachusetts but not in Boston, and 4730 persons were foreign born One thousand six hundred and twenty five patients were born in Boston Of the foreign-born group, the largest number were born in Ireland with Canada Italy and the British Isles next in order Thirty-two countries were represented

More than two thirds of the patients were living in Boston at the time of hospitalization Four thousand and thirty nine persons were residents of Massachusetts but not of Boston The areas and sections of Boston nearest the station supplied the largest number of patients, but all sections were represented

Most of the patients were unskilled or semi skilled workers. A small number were salesmen office workers or professional persons.

The police brought 12,712 patients to the hospital 2427 came in taxicabs, ambulances and private cars 915 walked into the hospital unaided

Seven thousand seven hundred and sixty four patients were discharged unconditionally 5501 were returned to police custody, 1607 were transferred to the Boston City Hospital 100 [illegible]

pitals Seven hundred and sixty-one were discharged at their own request against advice, 246 were discharged in the care of friends, 75 died

The majority required hospital care for one day or less A few were kept longer than one week Those with serious complications were referred immediately to the main hospital

Thirteen thousand six hundred and thirty-three patients were improved on discharge Two thousand three hundred and forty-six were the same on transfer or discharge, and 75 were discharged dead

The majority of patients were admitted between six in the afternoon and midnight

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ALCOHOLISM AT THE BOSTON CITY HOSPITAL

III Conditions on Hospitalization of 344 Patients With Delirium Tremens at the Haymarket Square Relief Station, 1923-1938*

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BOSTON

AS MEDICINE develops, increasing attention is being paid to social and psychological factors that influence the health of the individual patient Certain groups of patients are of special interest where these factors are being considered, and among them the alcoholic patient is being surveyed particularly in regard to his social background In one division, the Haymarket Square Relief Station, of a large municipal hospital, the Boston City Hospital, it has been possible to examine the records of 344 patients with delirium tremens admitted in the fifteen-year period 1923–1938 This study reports findings concerning these patients

Incidence

At the relief station the admission rate of patients with delirium tremens varied considerably from year to year In 1924, only 4 men received this diagnosis, in 1937 62 men and 8 women were admitted with delirium tremens The yearly average for both men and women was 23, and the average percentage of patients with delirium tremens among all alcoholic patients averaged 2 1 per cent, from 0 4 per cent in 1924 to 5 0 per cent in 1937 The incidence is much lower than that at the Boston City Hospital proper, where the number of patients admitted annually with delirium tremens from 1915 to 1935 has averaged 6.2 per cent of all alcoholic patients [1]

Sex and Age Distribution

Of the 344 patients with delirium tremens admitted in the period reported, 327 were men and 17 women, a ratio of 19 1, which is nearly the same as that for all alcoholic patients admitted (Table 1) In the age groups of thirty to thirty-nine and forty to forty-nine there were approximately the same number of patients—107 and 114 respectively The minimum number was found in the twenty to twenty-nine-year group The oldest patients were in the eighth decade

Marital Status

The majority of patients in this group were unmarried There were 194 single men and 4 single women, 109 men and 9 women were married

TABLE 1 *Sex and Age Distribution*

AGE GROUP	MEN	WOMEN
20–29	29	4
30–39	106	1
40–49	107	7
50–59	54	3
60–69	18	2
70–79	7	0
Unknown	6	0
Totals	327	17

Twelve men and 3 women were widowed, 4 men and 1 woman were divorced The marital status of 8 men was undetermined

Color

This group was comprised almost exclusively of white persons Only one Negro was admitted with the diagnosis of delirium tremens

Residence

Most of the patients (255 men and 11 women) were residents of Boston Fifty men and 6 women lived in Massachusetts but not in Boston Thirteen men lived in other states, and the residence of 9 was unknown The proximity of the Haymarket Square Relief Station to the food-market district and to one of the main railroad stations of the

*From the Neurological Unit of the Boston City Hospital and the Department of Diseases of the Nervous System of the Harvard Medical School

This study was completed in part with the assistance of Works Progress Administration Projects (Numbers 6148-1047 and 14667) for the Study of Alcoholism at the Boston City Hospital 1936–1938

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city may explain the hospitalization of the non resident patients The regional and sectional distribution of those patients living in Boston is of particular interest locally The areas nearest the relief station furnished the largest number of patients Seventy-two men and 6 women lived in the West End, 17 men lived in the North End Ninety-one men and 1 woman lived in Charlestown, and 39 men and 1 woman lived in the South End The remainder came from scattered sections of the city The largest groups came from sub-standard areas and those of relatively dense population

Birthplace

The places of birth were naturally more diverse than those of residence. One hundred twenty three men and 3 women were born in Massachusetts, outside of Boston 68 men and 4 women were born in Boston Twenty-five men and 5 women were born in other states, and 93 men and 3 women were born in foreign countries The birthplace of 18 men and 2 women was unknown Of the 96 foreign-born, 50 men and 1 woman were born in Ireland (this is not disproportionate to the large number of Irish born in the general population) Fourteen men and 1 woman were born in Poland and 6 men were born in Scotland Three men and 1 woman were born in England The following countries were represented by 1 man each Italy, Lithuania, Norway Austria and the Azores.

Occupation

Most of the patients in the group studied were employed in unskilled or manual occupations The customary work of 52 men and 11 women was unknown Eighty four men were laborers and 27 were longshoremen 16 were seamen There were a few representatives of skilled occupational groups, such as a printer, a tailor electricians, cabinet workers and plumbers The majority of the women were housewives, 1 nurse and 1 waitress were included

Time of Admission

Patients were admitted during all hours of the day and night The largest numbers were brought to the relief station between six and nine in the evening and nine and eleven in the morning (Fig 1)

Methods by Which Admitted

Most of the patients were brought to the relief station by the police 221 men and 8 women Thirty-eight men and 6 women were brought in by friends, in taxicabs or private automobiles, or by the hospital ambulance. Sixty-eight men and 3 women walked to the relief station unaided

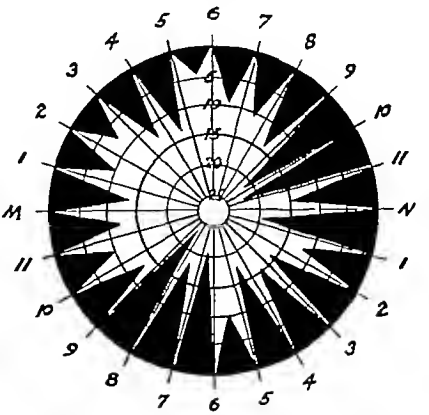

FIGURE 1 *Diagram Showing Hourly Distribution of Alcoholic Patients Admitted to the Haymarket Square Relief Station 1923–1937 (Black area represents patients)*

Place Where Symptoms Developed

Public streets and their vicinity especially doorways and alleys, were the commonest locations where patients were found (Table 2) The interior of buildings—that is home, house or some other building—was next in frequency Five men were taken from streetcars, taxicabs and elevated or railroad trains Seventy men and 5 women developed the first signs of delirium tremens while in police stations and jails Six men were taken from Boston Harbor and adjacent rivers or were found in the immediate vicinity Ten men came to the relief station from undesignated places

TABLE 2. *Places Where Symptoms Developed*

PLACE	MEN	WOMEN
Street doorway	129	5
Home house or building	77	4
Public place	30	3
Public conveyance	5	0
Police station or jail	70	5
River or harbor	6	0
Unknown	10	0
Totals	327	17

Length of Stay

In spite of the serious nature of delirium tremens, 262 men and 13 women who received this diagnosis remained in the relief station only one day It is known that 151 patients were

transferred to other hospitals Soon after the admission of the remaining 124 patients, 27 left against advice, and a large number went out in the care of friends for treatment at home or elsewhere Thirty-eight men and 2 women remained for two days, and the remainder stayed for three to seven days Only 2 patients remained longer than one week

Disposition

One hundred and twenty-seven men and 7 women were discharged without attendance One hundred and fifty-nine men and 8 women were sent to the main hospital

Condition on Discharge

The condition of 165 men and 9 women on discharge was unimproved This group is slightly larger than the number who were transferred to the Boston City Hospital Two men went to unspecified hospitals, and 29 were returned to police custody Twenty-six men and 1 woman were discharged at their own request against advice Only 4 men died at the relief station The low incidence of death in this group may be accounted for by the fact that the more seriously ill cases were transferred to the main hospital for further observation and more intensive treatment One hundred and fifty-eight men and 8 women were discharged relieved

Complications of Delirium Tremens

Delirium tremens occurred in very few cases without serious medical and surgical complications, pneumonia and fractures being most common Most of these patients were in poor physical condition, and were often suspected to be low in vitamin and mineral reserves Cardiac complications were also commonly found Various disturbances of the gastrointestinal tract and the nervous system (gastritis, neuritis, cerebral vascular accidents and convulsions) were frequently found

SUMMARY

The records of 344 cases diagnosed as delirium tremens after admission to the Haymarket Square Relief Station from 1923 to 1938 have been examined The following findings are reported

The average annual admission rate was 2 1 per cent, and ranged from 0 4 per cent in 1924 to 5 0 per cent in 1937

Men outnumbered women in a ratio of 19 1

The largest number of patients were between thirty and fifty years of age

The majority of patients were unmarried

Most of the patients were residents of Boston and came from areas near the hospital A good number were residents of Massachusetts outside of Boston Of the foreign-born group (96 in number), the largest number were born in Ireland

By far the largest number of patients were employed in unskilled or manual occupations

The time of admission varied, but the largest number were admitted between six and nine in the evening and nine and eleven in the morning

The great majority (299) of the patients were brought to the hospital by the police The remainder were brought by friends, in private automobiles or in taxicabs, and by the hospital ambulance

Patients became incapacitated in and were brought from the following places most commonly streets and doorways, next, the interior of buildings, then, public places, public conveyances, police stations, jails, rivers and Boston Harbor

Most of the patients stayed in the hospital only one day A few stayed from two to seven days

A large number of patients were sent to the main hospital, and a few to other hospitals

The condition of 174 patients was unimproved on discharge Twenty-nine were returned to the police and a few were discharged at their own request against advice Four patients (all men) died at the relief station

Most of these patients were suffering (in addition to delirium tremens) from medical and surgical complications Pneumonia and fractures were commonest among these, but the general condition of malnutrition and disturbances of the gastrointestinal tract and disorders of the nervous system were also common Prominent among the latter were gastritis, neuritis, cerebral vascular accidents and convulsions

REFERENCE

1 Moore M and Gray M G Delirium tremens a study of cases at the Boston City Hospital 1915 1936 New Eng J Med 220:953 956 1939

ALCOHOLISM AT THE BOSTON CITY HOSPITAL

IV Medical and Surgical Complications Among Alcoholic Patients Admitted to the Haymarket Square Relief Station, 1923-1938*

MERRILL MOORE M.D.,† AND M GENEVA GRAY PH.D.‡

BOSTON

OF 16,054 alcoholic patients treated at the Haymarket Square Relief Station from 1923 to 1938 the majority were suffering from other medical or surgical conditioos Strictly speaking only patients of this type were eligible for admission because it was expressly planned that this institution should care solely for conditions of an emergeney nature. During the first years in which the relief station was operated this restriction was carefully respected but in later years it became necessary to admit patients who were acutely intoxicated but showed no other signs of injury or illness

The records of all alcoholic patients admitted from 1923 to 1938 have been examined and the medical and surgical complications have been reviewed and classified The following classification comprises the injuries most commonly found abrasions, contusions, lacerations, combined abrasions and contusions, strains and sprains, and fractures These conditions are of clinical interest in the measure that they show the frequency with which various regions of the body are involved in the course of alcoholism complicated by trauma The number of cases reported is sufficient in size to indicate in a general way what complications are commonly encountered or may be suspected in intoxicated patients whose confused mental state and inability to give an adequate history on admission may, and sometimes does, lead to the neglect of serious surgical and neurologic conditions

The commonest location of injury among alcoholic patients is the head In this series of 16,054 alcoholic patients 10 494 injuries to the head in men and 380 in women varying in severity from abrasions (1589 men and 31 women) to fractures of the skull. The next commonest injuries were those of the upper and lower extremities There were 2990 injuries to these members in men and 257 in women Injury to the legs was slightly commoner among men thao women, but among the latter it occurred approximately 50 per cent more frequently than it did to the arms In juries to the chest among women occurred in approximately the same number of cases as did those to the back Injuries to the abdomen among women were rare. Table 1 gives the number of these injuries and their distribution over the various regions of the body Some patients suffered more than one injury but no effort is made here to indicate this duplication

In addition to the traumatic conditions reported in Table 1 the following diagnoses* were made

Epistaxis	600
Concussion	117

The terminology used for describing these conditions is that of the hospital records.

TABLE 1 *Traumatic Conditions among 16,054 Alcoholic Patients*

LOCATION	ABRASIONS	CONTUSIONS	CONTUSIONS AND ABRASIONS	LACERATIONS	STRAINS AND SPRAINS	FRACTURES	TOTALS
MEN							
Head	1,589	931	1 408	6,141	3 (neck)	422	10 494
Chest	45	52	22	13	3	97	222
Abdomen	14	12	14	6	—	—	46
Back	48	64	52	34	17	6	221
Arms	401	131	301	544	13	84	1 575
Legs	568	160	397	96	45	149	1 415
Totals	2. 66	1 350	1 4	6,834	81	778	13,973
WOMEN							
Head	31	62	62	209	1 (neck)	16	380
Chest	3	10	4	2	—	11	30
Abdomen	10	2	1	1	—	—	14
Back	—	6	2	—	4	2	14
Arm	26	21	18	24	1	9	99
Legs	42	35	37	8	18	18	158
Totals	112	136	124	243	24	56	695

From the Neurological U it of the Boston City Hospital and he Department of Diseases of the Nervous System of the 11 rv d Medic l School

This study wa completed i part with the assistance of Work Projects Administration Project (Numbers 6148-1047 and 1466?) for he study of Alcoholism at the Boston City Hospital 1936–1938.

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Immersion	115
Dislocation	62
Ecchymosis	61
Compound fracture	61
Burn	40
Hemorrhage	37
Septic hands or feet	33
Severed tendon	18
Stab wound	11
Bullet wound	7
Frozen feet	8
Traumatic synovitis	5
Internal injuries	5
Subdural hemorrhage	5
Injury of ear	4
Contused testicles	3
Severed artery	3
Dog bite	2
Punctured eye	2
Sacroiliac strain	1
Shock	1
Punctured lung	1
Severed nerve	1
Traumatic asphyxia	1

Other Conditions

Among these alcoholic patients there were many who showed complications (Table 2) other than the traumatic conditions reported above A large number of them were directly related to the alcoholic or post-alcoholic state

TABLE 2 *Frequency of Non-Traumatic Complications Accompanying Alcoholism*

TYPE OF COMPLICATION	NUMBER OF DIAGNOSES
Neurological	517
Gastrointestinal	240
Cardiovascular	138
Resulting from poverty exposure, malnutrition etc	101
Respiratory	64
Poisoning by chemical agents	46
Dermatological	21
Surgical	46
Genitourinary	22
Infectious disease	21
Bone disease	4
Neoplastic conditions	3

The nervous system was most commonly involved (517 cases) Delirium tremens was seen in 344 patients and is considered to be a separate entity, since as a clinical syndrome it is quite distinct from acute intoxication and the onset of symptoms may be delayed and may appear to be quite independent, at least temporarily, of previous drinking Seventy-two patients suffered from seizures on or shortly before admission Many of these patients might have been more properly classified as being in the convulsive state, for the condition known locally as "rum fits" has not been shown to be identical with essential epilepsy Thirty-four persons were diagnosed as having hysteria, most of them being women who were recovering from acute intoxication Eighteen persons showed mental changes consistent with advanced age and were diagnosed as in a senile mental state Three patients were believed to be malingering

Among other organic conditions of the nervous system observed among alcoholic patients were neuritis (5 cases), hemiplegia (5 cases), facial paralysis (4 cases), cerebrovascular accidents (6 cases) and nerve blindness (2 cases) Six patients were actively hallucinated on admission Syphilis of the central nervous system was diagnosed in 2 cases Five cases were diagnosed as psychoneuroses and 2 as psychosis of unspecified type

Among 240 cases presenting gastrointestinal symptoms, simple gastritis was commonest (156 cases) Six patients suffered from hemorrhoids which were so acute as to require emergency treatment Three complained of acute diarrhea Each of the following conditions occurred in 2 patients peptic ulcer, cirrhosis of the liver, colitis and intestinal obstruction Single cases of cholecystitis, constipation, inflamed colostomy, pellagra, acute colic, prolapsed rectum and stomatitis were treated Except for cases with simple gastritis and diarrhea, most of these conditions had existed for some time before admission, if the recorded histories are reliable.

The heart and vascular system were involved in 138 cases, of which myocarditis was the commonest (41 cases) Thirty-four cases were diagnosed as hypertension and 33 patients admitted because of syncope (*sic*) associated with their alcoholism Other conditions diagnosed were varicose ulcers, cardiorenal disease, rheumatic heart disease, heat prostration, valvular disease, phlebitis and cardiac enlargement

One hundred and one persons were suffering from the effects of malnutrition, exposure and other factors associated with low income, unemployment and inadequate living conditions Forty-five had pediculosis and 25 were acutely ill as the result of exposure Seventeen were admitted for observation, 6 because of malnutrition, 4 because of general debility and 1 because of starvation

Respiratory and bronchial conditions were common There were 29 cases of upper respiratory and bronchial infections Fourteen persons were obviously tuberculous and 6 had active pleurisy Five had been made ill by inhaling smoke Two patients complained of hemoptysis and 2 each were diagnosed as having empyema, pharyngitis and laryngitis One patient had been nearly suffocated after the inspiration of vomitus

There were 46 cases of non-traumatic surgical complications, including 29 cases with hernia, 8 cases of hydrocele and a few cases of appendicitis,

postoperative adhesions, adenitis, lymphangitis and ovarian cyst.

There were 46 cases of poisoning. The toxic agents were paraldehyde, veronal and other barbiturates, wood alcohol, mercuric chloride, Sylpho-Nathol, carbon monoxide, Lysol, roach powder, corn cure, bay rum, oil of wintergreen, lead and morphine. These cases can be divided into those in which the poison was taken with suicidal intent, by mistake, as a substitute for alcohol or as a result of industrial exposure. Two patients were diagnosed as having ptomaine poisoning.

Twenty-one cases of skin disease were recorded. Most frequent were scabies and psoriasis. There were a few cases of ichthyosis, impetigo and eczema.

Only three neoplastic conditions were seen: carcinoma of the prostate and of the stomach (1 case each) and tumor of the skull (1 case).

Twenty-two cases of genitourinary disease were observed. There were 7 cases of acute urinary retention and a few each of the following: prostatitis, gonorrhea, cystitis, nephritis, hematuria, hydronephrosis, chancroid, seminal vesiculitis and paraphimosis.

There were 16 cases of pneumonia, 4 of syphilis and 1 of meningitis. Three cases of osteomyelitis and 1 with an abscess of the hip were seen.

COMMENT

From the findings reported above, one outstanding observation can be made, namely that traumatic complications are much more frequent among alcoholic patients than are those which are non-traumatic. In this series of 16,054 alcoholic patients there were 14,668 traumatic complications reported, as compared with 993 non-traumatic. It is probable that the incidence of non-traumatic complications is not greatly in excess of the number that one might expect to find in a non-alcoholic group of similar size. The records from which this information has been gathered do not usually comment on the severity or the duration of the non-traumatic complications. Many of them would not have required and would not have received treatment if the patient had not been hospitalized on account of alcoholism. Except for the patients showing involvement of the gastrointestinal system directly attributable to recent drinking, and the cases with poisoning due to various toxic substances, many of these non-traumatic conditions were chronic. It is also possible that many of the patients included in this series developed pneumonia and other complications after transfer to other hospitals.

SUMMARY AND CONCLUSIONS

Among 16,054 alcoholic patients treated at the Haymarket Square Relief Station from 1923 to 1938, 14,668 had complications of traumatic origin and 993 had non-traumatic complications.

The commonest site of injury was the head, there were 10,494 injuries among men and 380 among women.

Among men the next commonest locations of injury were, in order, arms, legs, chest, back and abdomen and, among women, legs, arms, chest, back and abdomen.

The surgical complications found among alcoholic patients are tabulated.

Among the non-traumatic complications, disturbances of the nervous system and the gastrointestinal tract were most frequently found.

Traumatic complications were approximately fifteen times as common as non-traumatic complications.

It is apparent that the non-traumatic complications in alcoholic patients admitted to emergency hospitals do not assume the importance or require the care that is necessitated by the surgical injuries frequently found in these patients. It is possible that the non-traumatic conditions reported here are no commoner than among the general population, with the exception of neurological and gastrointestinal disorders.

ALCOHOLISM AT THE BOSTON CITY HOSPITAL

V The Causes of Death Among Alcoholic Patients at the Haymarket Square Relief Station, 1923-1938*

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BOSTON

MOST of the alcoholic patients who died in the Haymarket Square Relief Station of the Boston City Hospital from 1923 to 1938 suffered from serious injuries in addition to alcoholism There were 75 of these fatal cases in the fifteen-year period—72 men and 3 women Only 7 patients had been in the hospital for more than two days before death The commonest contributory cause of death was severe head injury, chiefly fracture of the skull and severe concussion Many of the fatalities occurred in patients of advanced age, and among these cardiac complications were frequently reported Occasionally death followed infection of apparently minor wounds For the most part death was due more directly to injury or other surgical complications than to the effects of intoxication

In reviewing the 75 fatal cases among alcoholic patients it is of interest to note the duration of their terminal illness (Table 1) Fifty-eight, or approximately 77 per cent, of these patients lived only one day Thirteen patients, approximately 17 per cent, lived two or three days, and the remaining 4, or 6 per cent, lived from three days to a week or more In interpreting these findings it must be borne in mind that the cases do not include all deaths from alcohol in the section of Boston served by this relief station, and hence they present only the minimal facts Many deaths from alcohol and associated injuries occurred before arrival at the hospital and were not admitted Additional deaths in the same localities occurred in the same period but the bodies were taken directly to morTABLE 1 *Duration of Terminal Illness after Admission*

DURATION	NO OF CASES
days	
1	58
2	10
3	3
4	1
5	0
6	0
7 or more	3
Total	75

tuaries Furthermore, additional deaths in this group of patients occurred after transfer to the main hospital, and so are not given here In all the deaths reported the bodies were viewed by the medical examiner

Deaths from alcohol occurred most frequently among men from thirty to forty years old (Table 2)

TABLE 2 *Age Distribution*

AGE	MEN	WOMEN	TOTAL
yr			
10–19	0	1	1
20–29	5	1	6
30–39	22	0	22
40–49	11	0	11
50–59	11	0	11
60–69	6	1	7
70–79	2	0	2
80	2	0	2
Unknown	13	0	13
Totals	72	3	75

This finding among 75 deaths, all but 3 of which were in men, differs slightly from that among male alcoholic patients admitted to the main hospital in 1934 and 1935, where most men dying with alcoholism were between forty-six and fifty [1]

Although head injury (32 cases) and cardiac disease (10 cases), possibly on the basis of deficiency disease in some cases, were the most frequent complications, some additional ones were noted (Table 3)

TABLE 3 *Chief Medical and Surgical Complications*

Head injury	17
Fractured skull	15
Cardiac disease	10
Concussion	5
Pneumonia	2
Bronchitis	2
Epistaxis	2
Cerebral edema	6
Malnutrition pellagra	2
Delirium tremens	4
Dislocation of jaw	1
Bullet wound	1
Burns	1
Veronal poisoning	1
Pulmonary hemorrhage	1
Ruptured liver	1
Total	71

The incidence of death was low, and differed from that among alcoholic patients at the main hospital in that most deaths were associated with trauma and were probably due more directly to injury than to the medullary depression associated with acute alcoholism There is no doubt that the state of intoxication contributed partly

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to death, for these patients were in poorer physical condition than they would have been if they had been entirely sober at the time of injury

SUMMARY

There were 75 fatal cases among 16 054 alcoholic patients admitted to the Haymarket Square Relief Station from 1923 to 1938 The majority of these deaths were associated with the effects of severe injury particularly of the head

The duration of stay in 77 per cent of these cases was one day or less

The largest number of deaths occurred in the age group from thirty to forty

REFERENCE

1 Moore, M and Gray M. G.: The problem of alcoholism in the Boston City Hospital. New Eng. J. Med. 217:381-388. 1937.

ALCOHOLISM AT THE BOSTON CITY HOSPITAL

VI. An Estimate of the Intelligence of Alcoholic Patients at the Haymarket Square Relief Station, as Related to Chronological Age, Marital Status and Occupation*

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BOSTON

THE alcoholic patient frequently shows changes in mental acuity which are difficult to evaluate. It is virtually impossible for a physician to know whether the individual is subnormal intrinsically, whether his dullness is the result of recent intoxication or whether he has undergone mental changes as a result of the continued use of the narcotic, unless he has been under observation for a long time. In the course of a survey of alcoholism conducted between 1936 and 1938 at the Haymarket Square Relief Station of the Boston City Hospital it was possible to examine 279 men admitted with the diagnosis of alcoholism. Not all these were admitted during the acute stage of intoxication, for many were suffering from associated traumatic conditions and many others from post-alcoholic conditions. These patients were not examined until the day following admission, and represent a partially selected group of alcoholic subjects in that those whose sensorium was not clear were excluded. The majority remained in the hospital only one day, and after that time were either transferred to other hospitals or discharged. The data summarized also represent facts from a selected group in the sense that patients who did not co-operate or whose responses were obviously false are not included. In addition to the test questions, the following information was recorded: chronological age, education, occupation and marital status. Although the data are based on the patients' statements and may be unreliable in some cases, they seem to agree with information obtained from relatives and previous histories.

In interpreting this material it is important to keep in mind that these individuals represent a selected economic group,[1] and that a large number were picked up by the police and sent to the Haymarket Square Relief Station for emergency treatment.

Chronological Age

There is a range in chronological age among these 279 individuals from nineteen to seventy-six years. 123 patients (44 per cent) were between thirty-five and fifty. One hundred and five (38 per cent) were more than fifty, whereas only 51 men (18 per cent) were under thirty-five. It is usually believed that men between thirty-five and fifty have reached the most productive years of their life, if they are properly adjusted.

Mental Age

The Kent emergency test[2] was used in studying mental age. It was chosen because little time is required, and because this informal method of questioning wins the patient's confidence. No elaborate equipment is needed. The test was administered the day following admission when the patients had presumably recovered from their intoxication. Furthermore, the satisfactory correlations which have been obtained between this test and the standard Binet test were considered. Elwood Burchard and Teagarden[3] comments, "It may be said that in over 300 cases surprisingly high correlations were found between the results of the Kent emergency test which takes little more than ten minutes to administer, and the results of the Binet test."

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A tabulated comparison between the chronological and mental ages of this group is shown in Table 1 The range of mental age was from

TABLE 1 *Correlation Between Mental and Chronological Ages of 279 Male Alcoholic Patients (Kent E G-Y Test*)*

CHRONOLOGICAL AGE	NO OF CASES	MENTAL AGE RANGE 9	10	11	12	13	14	14+
19–24	9				2	2	3	2
25–29	19		1	2		9	5	2
30–34	23			2	2	6	11	2
35–39	41		1	2	6	11	11	10
40–44	44	1	1	6	6	10	17	3
45–49	38			6	9	9	10	4
50–54	29	1	1	2	8	6	7	4
55–59	25		2	1	6	11	5	
60–64	25			7	5	9	4	
65–69	14	1	1	2	3	5	1	1
70–74	10		1	1	2	5	1	
75–79	2			1				1
Totals	*279*	*3*	*8*	*32*	*49*	*83*	*75*	*29*

*In a large group the norms run from 5 to 14+ years

nine to fourteen plus years Thirty per cent of the patients had a mental age of thirteen, 37 per cent were fourteen or over, and only 33 per cent were under thirteen This indicates that the group comprised individuals who may be described as mentally dull but who certainly cannot be classified as feeble-minded There were 3 patients with a mental age of nine Two of these were foreign-born, married laborers, so that language may well have been a factor producing a low mental status The third man was married, a meat-cutter, who had completed the fifth grade in school

The patients in the ten-year group were all single men with the exception of one widower Four of them were foreign-born, but only one in a non-English speaking country The most highly skilled occupation was that of steamfitter The education of men in the eleven-year group ranged from no schooling to grammar-school graduation Their occupations were those requiring little training or intelligence One uneducated English-born patient was a landscape gardener About one third of the group were single men The twelve-year group ranged in education from no formal study to two years of college, and in occupations from laborers to a civil engineer Nine men were foreign-born and the majority were unmarried

Education

The information elicited in regard to education is not very reliable. Nearly 20 per cent of the patients obtained their education in countries other than the United States Most of the foreign-born came from Ireland, with Nova Scotia the next in order Sixteen individuals asserted that they had had college training, but this varied in extent from evening classes of less than a year to graduation and even graduate work, so that there was little uniformity It was apparent that most of the men had had some schooling and that over half of them had entered high school

Occupation

There is a curious sub-grouping as to occupation, since substantially more than half these alcoholic patients (161) shared a range of ten occupations (Table 2) This concentration is not

TABLE 2 *Principal Occupations of 161 Alcoholic Patients*

Laborers	40
Seamen	31
Salesmen	16
Longshoremen	15
Truck-drivers	15
Cooks	15
Clerks*	10
Painters and plasterers	*9*
Meat-cutters	5
Mechanics	5

*A vague category The intelligence of these men precluded a very high level of occupation

surprising, since most of the patients fell into the unskilled-labor category Of the remaining 118 individuals, 3 patients at most reported the same customary occupation, the other occupations were for the most part reported by single representatives

The relation between alcoholism and occupation is interesting, for it cannot be ascertained on the basis of available information whether certain occupations contribute to the neurotic background which seems to condition chronic alcoholism, or whether the innate intelligence of these persons has been so low that they have never qualified for higher types of work Possibly some have carried on skilled work, but their drinking habits have caused them to slide into the non-skilled groups From the public-welfare records of many of these patients it is apparent that they have not worked for years previous to hospitalization and have been supported by public agencies during that time The proportion of persons among this group who have been unemployed is relatively higher than that among the general population of Boston during the same period It is also higher than that reported by the patients themselves, and this fact throws considerable doubt on the accuracy of their statements There may be a distinct relation between the relatively low-grade type of work and the number of men in the age groups where layoffs from increasing age and disability occur

Marital Status

The marital status of these alcoholic patients seems to be significant (Table 3) Fifty-one per cent had never been married Of the group aged *from thirty-five to fifty, more than half* were single, widowed, separated or divorced This indi-

cates that most of the group were so poorly adjusted that they had never married, or that, if married, they had failed to make satisfactory adjustment The loss of marital partners is frequently an upsetting factor, and often coincides with the onset of alcoholism

TABLE 3. *Marital Status of 279 Alcoholic Patients*

CHRONOLOGICAL AGE	MARRIED	SINGLE	SEPARATED OR DIVORCED	WIDOWED	UNKNOWN
19–24	2	7	–	–	–
25–29	6	13	–	–	–
30–34	6	16	1	–	–
35–39	13	22	5	–	1
40–44	15	20	4	4	1
45–49	18	16	1	3	–
50–54	11	14	–	4	–
55–59	6	14	2	3	–
60–64	10	11	1	3	–
65–69	2	6	–	6	–
70–74	1	4	–	3	2
75–79	–	–	–	2	–
Totals	90	143	14	28	4

DISCUSSION

There seems to be no significant relation between chronological age and mental age or chronological age and education among these patients The paucity and unreliability of the data on education make it impossible to establish any relation between mental age and education There appears to be some relation between occupation and certain age levels Thus, it appears that older men tend to be laborers or seamen, whereas the salesmen and longshoremen comprise the middle aged group Possibly this indicates a failure to make occupational adjustments and a gradual decline with increasing age into the less skilled or totally unskilled occupational categories. In the older groups, there must be borne in mind the possible influence of socio-economic factors, such as the likelihood that foreign birth and inadequate education, with the added handicap of limited intelligence, have negated even the poor training of these men so that as the years go by they are gradually forced into unskilled occupations

The marital status of these patients is indicative of their poor adjustment. In the 279 cases studied there is a positive correlation between marital disharmony and alcoholism Whether the marital maladjustment is causal or consequential of alcoholism cannot be decided on the basis of this material, but it presents an aspect of the problem worthy of more detailed investigation

SUMMARY

This paper reports the results of the Kent emergency test as applied to 279 alcoholic men patients at the Haymarket Square Relief Station of the Boston City Hospital The chronological age ranged from nineteen to sixty seven and the mental age from nine to fourteen Sixty seven per cent of the patients showed intelligence of thirteen or higher Their education according to their own statements ranged from none to college training, but these data are probably not entirely reliable. The majority were unmarried or had had broken marital relations Their occupations were for the most part in low-grade types of work.

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REPORT ON MEDICAL PROGRESS

OPHTHALMOLOGY

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IT IS no easy task to single out the most significant recent advances in clinical ophthalmology, as time alone can reveal their ultimate significance Nevertheless, according to our present criteria the following are at least conspicuous

SEPARATION OF THE RETINA

This has been one of the more prolific causes of blindness in the past It still takes its toll, but in the last decade such a tremendous step forward has been made in its treatment that the chances of successful outcome have increased from the previous 1 or 2 per cent to the present 60 or 70 per cent The significance of this improved situation is apparent when one realizes that retinal separation is a relatively common affection, and if untreated almost invariably leads to blindness

The modern success in treatment has resulted in renewed interest in the pathogenesis of separated retina The problem is essentially one of mechanics determined by the anatomic arrangement of the ocular structures For reasons which have their basis in the embryonic development of the eye, the retina is always separated from the outer ocular layers by a potential space Under certain pathologic conditions this potential space becomes filled with fluid, a condition which produces the clinical picture properly known as separation of the retina (erroneously called "detachment") Fluid may collect in this space as part of a generalized edema (toxemia of pregnancy, renal failure, and so forth), but separation of this type is rare and requires no local treatment The usual type of separation, called idiopathic, has a different mechanism Here a hole or tear in the retina is usually found, and when one is not found it is assumed to exist so far forward as to be indiscernible by means of the ophthalmoscope When Gonin[1] found that a separation could be cured by obliteration of the hole, its etiologic significance was immediately apparent The mechanism is, in all probability, a simple one The hole establishes a connection between the vitreous, which is normally in front of the intact retina, and the subretinal space, so that fluid from the vitreous, or the vitreous itself, may pass through it Eventually the entire subretinal space may be filled and the retina completely separated from its normally adjacent layers

Two conditions, myopia and senility, predispose to hole formation and therefore to separation of the retina In either case a superimposed trauma may be the precipitating agent The elongated eye of the myope is apt to develop the hole, possibly owing to the fact the retina is under tension,[2] [3] but more probably owing to the degenerative changes which occur in the myopic retina[4] Similarly, in the senile retina it is the degenerative changes that lead to the formation of a hole and consequent separation[4]

There is a general agreement as to the significance of the hole, but not as to the manner in which it occurs That it results from degenerative changes as above suggested is not universally accepted Thus it is claimed (Leber,[5] Gonin,[6] Lindner[7]) that the essential process is a shrinking of the vitreous and a tearing of the retina by traction Recently it has been suggested by Walker[8] that the deformation of the globe by sudden contraction of one of the extraocular muscles could cause the retina to be torn

Fortunately, adequate treatment of separated retina does not necessitate unanimous agreement as to its pathogenesis The striking success of surgery in the last ten years has convinced the most skeptical that operative intervention is indicated in every fresh case of idiopathic separation of the retina

The surgical approach is aimed at the closure of the hole This may be accomplished by a variety of technics, which have in common the removal of the subretinal fluid and the artificial attachment of that portion of the retina containing the hole to the outer ocular layers Gonin[1] in Lausanne was the first to introduce this surgical procedure into ophthalmology, and in 1929 he was able to report 100 successful operations Since this time the number of successes has swelled to the thousands, and the operation for separated retina is today a common procedure

The original method of Gonin has been considerably modified He evacuated the subretinal fluid by knife punctures and sealed off the hole by actual cautery Today the fluid is evacuated and the hole sealed off simultaneously by diathermy punctures, but the principle is the same as in

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Gonin's method. Other methods, such as chemical cauterization on the one hand and electrolysis on the other, are being currently tried, but diathermy has been the most widely adopted.

The prognosis in separation of the retina depends on many factors, known and unknown.[9] Most favorable are those cases in which the hole is situated at the anterior attachment of the retina. The prognosis is also better the earlier the operation, the smaller the hole and the less severe the myopia. If the operation is performed at an early stage—and contraindications to operation are very few—success can be expected in at least two out of three cases. With better technic the prognosis should continue to improve.

KERATOPLASTY

By this is meant the substitution of transparent cornea from one person for opaque cornea of another. The results, when successful, may be most spectacular and have therefore received a large amount of publicity in the lay press. From the ophthalmological point of view the procedure has not been so gratifying, for opacification of the transplanted cornea usually occurs after a few months; most of the reports of successful transplants have been made prematurely. There are nevertheless some cases in which a lasting improvement in vision has been obtained.

Transplants have been tried in various types of corneal opacities, most frequently in residual opacities of gonorrheal ophthalmia, trachoma, interstitial keratitis and leprosy. Unfortunately those cases with an entirely opaque cornea, wherein a transplant is most desirable, are less favorable for operation than those with an incomplete opacity.[10] The best results have been obtained in opacities from interstitial keratitis.[11]

There is at the present time a difference of opinion as to the best source of material for transplants. Corneas from animal eyes (heterokeratoplasty) have been uniformly unsuccessful. Human corneas have been taken from fetuses, from cadavers, from freshly enucleated eyes (homokeratoplasty) and rarely from the opposite eye of the same person (autokeratoplasty). Apparently corneas from old people are more likely to retain their transparency than those from young people.[12] Cadaver corneas, removed within a few hours post mortem and kept refrigerated, have been extensively used and recommended especially in Russia, where the supply is apparently ample.[13] Corneas from enucleated eyes have also been used with some success but the local anesthetic used at the time of the enucleation is said to affect the transplant unfavorably.[14] Identical blood typing between donor and recipient plays no role.[13]

Of interest also is the fact that both quartz[15] and glass-button[16] implants (allokeratoplasty) have been recently substituted for opaque corneas (a proposal that was made in 1789[17]), but success has not as yet been recorded with either.

For the preoperative examination of the anterior segment of the eye, where the pupil is hidden by the opaque cornea, the resources of modern photography have been utilized in a most ingenious way. Satisfactory studies of the pupil have been made by infra-red photography through the corneal opacity.[18] This procedure is based on the same principle as photography through clouds.

The future of keratoplasty will have to speak for itself. At the present time one can merely say that the immediate results are often striking but the end results are all too frequently disappointing. What the lay press says about it must be taken with skepticism.

SULFANILAMIDE

Sulfanilamide has been tried liberally during the last two years in ophthalmology as in other branches of medicine. The contributions to the literature have undoubtedly been unilateral, successes rather than failures being reported. To my knowledge no large controlled series of cases has been studied. In individual case reports, however, success with sulfanilamide has been reported in the following conditions: in gonorrheal ophthalmia, both of the newborn and of adults, in several cases of orbital cellulitis, in trachoma, in panophthalmitis and in 1 case of postoperative endophthalmitis. The cases of gonorrheal ophthalmia[19–21] and of orbital cellulitis[22–24] have apparently shown very striking improvement with sulfanilamide. The course of the disease was shortened and the complications reduced. Surprisingly enough the only reported case of gonorrheal iritis in which sulfanilamide was used was not helped by it.[24] The drug apparently has a favorable effect in the succulent stages of trachoma but is of questionable benefit in cases of long duration.[4–23] It is possible that the beneficial effect may be due to action on the secondary infections rather than on the trachoma per se. Only 2 cases of panophthalmitis treated by sulfanilamide have been reported: in the first recovery occurred and the causative organism was unknown; in the other the eye was lost and the culture showed colon bacilli.[25] The 1 reported case of postoperative endophthalmitis improved promptly after using the drug.[25]

Experimentally sulfanilamide has been found innocuous when dropped into the conjunctival

sacs of a rabbit,[34] and it may also be injected with impunity subconjunctivally or into the anterior chamber In animal eyes which have been inoculated with hemolytic streptococci, sulfanilamide exerts a definite therapeutic effect infections of the anterior part of the eye are cured, while infections of the posterior part of the eye, from inoculations into the vitreous, are retarded The favorable effect can be demonstrated when sulfanilamide is given locally with the inoculation, as well as when it is given systemically

Neither the dose, the indications, nor the optimal route of administration of sulfanilamide for ophthalmological purposes has as yet been standardized Nor has any report of sulfapyridine in eye diseases yet appeared

CATARACTS

Recent progress so far as cataracts are concerned has been largely academic The lens in its normal and pathologic state has been studied extensively from the physicochemical point of view, but the practical application of these studies is not immediately apparent The much-desired medical treatment of cataracts is still wanting, pharmaceutical advertising to the contrary notwithstanding Vogt's recent study[35] on senile lens changes in identical twins would indicate that the predisposition to senile cataracts is inherent in the germ plasm, and that the possibility of ever finding a medical treatment for cataract is no greater than in other defects inherent therein

The list of causes of cataract other than the senile cataract is constantly being enlarged Dinitrophenol, which is the most recent addition, may produce cataracts when "therapeutic" doses only are given [36] The mechanism of its toxic action is not apparent, but the cataracts may not appear for several months to a year after the discontinuance of the drug Other specific causes of cataracts in human subjects are ergot, naphthalene, x-ray, infra-red radiation, hyperparathyroidism, cretinism, myotonia atrophica and diabetes (of the young) Thallium and galactose have produced cataracts in animals but never in human subjects

A decided technical improvement has been made in the surgery of cataract extraction in that the lens and capsule are now removed in toto This method requires more operative skill, and is perhaps more dangerous than the previous one in which the lens capsule was not entirely removed, but in proper hands the subsequent optical results are better, and there need be no fear of secondary cataract From the patient's point of view, the procedure is superior in that he does not have to wait until the cataract is ripe or until he is practically blind before being operated on

DIAGNOSTIC INSTRUMENTS

The invention of the ophthalmoscope, in the middle of the last century, marked the beginning of ophthalmology as a medical specialty Since then, no instrument has been forthcoming in any branch of medicine which has opened up so vast a field for diagnosis However, in relatively recent years other instruments have been introduced which, while not rivaling the ophthalmoscope in importance, are nevertheless important additions to the diagnostic armamentarium The most valuable of these are the tonometer, the biomicroscope, the gonioscope and an apparatus to measure the pressure in the retinal blood vessels which, in lieu of a better name, is called the ophthalmodynamometer

The tonometer is the oldest of these and probably the most indispensable It estimates the intraocular pressure by measuring the impressibility of the cornea With this instrument the diseases grouped under the heading of glaucoma can be accurately diagnosed and followed

The biomicroscope is a binocular dissecting microscope set up horizonally instead of vertically, and is used in conjunction with a focal slit-shaped light beam It gives a microscopic view of the anterior segment of the living eye With it one may examine the cornea, sclera, anterior chamber, lens and anterior portion of the vitreous The posterior portion of the eye is ordinarily inaccessible for biomicroscopy

The gonioscope is an instrument of very recent date, purporting to make accessible for examination the angle between the iris and the cornea Here lie the aqueous drainage canals,—or at least a good part of them,—which are of the utmost clinical significance, especially in regard to glaucoma The gonioscope, in conjunction with a special contact glass which replaces the normal refraction of the cornea, enables one to see the angle region with optional magnification

Finally, the ophthalmodynamometer, which measures the blood pressure in the retinal vessels, is probably of as much interest to the internist and the neurologist as to the ophthalmologist The essential feature of the instrument is a spring which enables one to exert a variable force against the eye The intraocular pressure can be raised accordingly to any desired level. By simultaneously watching the retinal artery with an ophthalmoscope one can determine the exact pressure needed to cause collapse of the retinal artery during one phase of the cardiac cycle, and by raising the pressure still further one can determine the exact pressure needed to cause lasting collapse of the artery Analogous with sphygmomanometry elsewhere in the body, the former corresponds to the retinal diastolic and

the latter to the retinal systolic pressure. The normal retinal arterial pressures are about half the brachial pressures[37] Their determination is important insofar as they reflect the pressure conditions in the same sized vessels of the brain which are not accessible for measurement.[38] Of particular interest is the fact that an abnormal elevation of the retinal arterial pressure precedes the appearance of choking of the disk, and is therefore one of the earliest signs of increased intracranial pressure[39–41] It has been claimed, but not as yet adequately proved that abnormally low retinal arterial pressures play a leading role in the pathogenesis of the optic atrophies[43, 44]

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CASE RECORDS OF THE MASSACHUSETTS GENERAL HOSPITAL

ANTEMORTEM AND POSTMORTEM RECORDS AS USED IN WEEKLY CLINICOPATHOLOGICAL EXERCISES

FOUNDED BY RICHARD C. CABOT, M.D

TRACY B MALLORY, M.D., *Editor*

CASE 25281

PRESENTATION OF CASE

First Admission A forty-eight-year-old white married Irish woman was admitted complaining of diarrhea

About six months before admission she began having intermittent watery diarrhea The movements were not painful but sometimes contained a small amount of bright-red blood They were preceded by a few cramps and it was necessary for her to relieve herself immediately or she could not control the sphincter She soon began to feel tired and run down The diarrhea gradually increased so that during the two months before entry she had three or four watery movements a day associated at times with a small amount of bright-red blood During this time she had no abdominal pain and no nausea or vomiting, but had marked anorexia

She was born in Ireland but had lived in Massachusetts during the past twenty-five years Eight years prior to admission she came to the hospital with a gumma on the left lower leg She was given forty injections of bismuth and nineteen of arsphenamine

Physical examination showed a well-developed and nourished woman in no distress There were small telangiectases on both cheeks She was edentulous A small lymph node was palpated in the right groin The heart was slightly enlarged to the left A soft systolic murmur was heard down the left sternal border The blood pressure was 128 systolic, 80 diastolic There was a double scoliosis of the upper thoracic spine The abdomen was slightly obese but otherwise negative The cervix was lacerated, the vaults clear Rectal examination revealed marked tenderness About 7 cm above the anus a soft stricture was felt encircling the tip of the finger The right ankle showed slight puffiness The left leg was generally swollen and tense, especially around the ankle

The temperature was 98°F, the pulse 70 and the respirations 15

Examination of the urine was negative The blood showed a red-cell count of 3,900,000 with 60 per cent hemoglobin, and a white-cell count of 8000 with 46 per cent polymorphonuclears, 42 per cent lymphocytes, 8 per cent mononuclears and 1 per cent eosinophils The nonprotein nitrogen of the serum was 20 mg per 100 cc, the chlorides 106 milliequivalents per liter, the carbon-dioxide combining power 67 9 vol per cent, the van den Bergh normal indirect, and the serum protein 64 gm per 100 cc A blood Hinton test was negative A lumbar puncture showed normal pressure and dynamics, and a normal fluid A spinal-fluid Wassermann test was negative Two Frei tests with mouse-brain antigen were positive Several stool examinations were guaiac positive

A barium enema x-ray showed that barium passed to the cecum without delay and entered the terminal ileum The rectum and lower sigmoid were markedly reduced in size, and there were fine serrations along the margins of the rectum The proximal colon was normal in contour but showed slight, irregular haustral markings There was some thickening of the mucosa throughout the transverse colon After evacuation the mucosa of the rectum appeared irregular In the right upper quadrant there was a ring shadow characteristic of gallstone

The patient was given sulfanilamide therapy and iron There was very little change in her condition She was discharged on the twenty-second hospital day

Final Admission (seven months later) Soon after discharge from the hospital the patient was in bed for five weeks with pleurisy and effusion according to a letter from her local physician Her diarrhea had continued unabated Griping and tenesmus were relieved by mineral oil She recalled that she had had intermittent edema of both ankles for several years One month before readmission she noted the sudden onset of rather severe pain in both shoulders During the next three days the pain traveled down her right arm and finally involved her index and middle fingers which became cold and blue Two or three days later a "sore" developed on the end of the index finger This later healed over almost completely At first there was numbness of the fingers which gradually disappeared However, they remained cold Soon after the development of the lesion in the fingers she noticed the onset of numbness in the front of the right leg, involving the whole of the lower leg and foot The leg became flexed for a day Numbness and tingling remained

Physical examination showed a pale, well-nourished woman in no acute distress The heart was slightly enlarged There were basal and apical systolic murmurs The radial pulse was weak on the right The second and third fingers

of the right hand were cold but pink There was edema of both legs to the knees

The temperature was 99°F., the pulse 90 and the respirations 20

Examination of the urine was negative The blood red-cell count was 2,800,000 with 46 per cent hemoglobin, and the white-cell count 3900 with 41 per cent polymorphonuclears, 48 per cent lymphocytes, 8 per cent mononuclears and 3 per cent eosinophils. The smear showed microcytic, hypochromic cells and 22 per cent nonsegmented polymorphonuclears The reticulocyte count was 1 per cent. A blood Hinton test was negative The serum protein was 6.2 gm per 100 cc., the nonprotein nitrogen 17 mg A Takata Ara test was weakly positive, a formol-gel test doubtfully positive. Three Frei tests with mouse-brain antigen showed a 2 or 3 mm area of erythema at the end of forty-eight hours Numerous stool examinations were guaiac positive An electrocardiogram was normal except for a regular tachycardia with a rate of 140

An x-ray film of the chest showed scoliosis of the upper dorsal spine with convexity to the right side. The heart was enlarged in the region of the left ventricle The aorta was not definitely dilated

On the twelfth hospital day shortly after a transfusion the fingers of the right hand suddenly became blue and numb, and excruciating pain was noted in the right hand No pulse was present in the antecubital space A few hours later the brachial artery was explored and a 2-cm bullet-shaped embolus removed The circulation improved temporarily but after a few days the hand showed evidence of beginning gangrene. On the thirty-first hospital day the hand and lower forearm were amputated Afterward her temperature varied almost daily between normal and 101°F An x-ray film of the chest at this time showed diffuse dullness but not complete consolidation at the left base. There was a slight amount of diffuse peribronchial congestion in the left upper lobe. The right side was clear A beginning sore throat was noted on the thirty-second hospital day and a culture showed beta-hemolytic streptococci The temperature rose to 102°F After a few days the throat improved and the temperature subsided

On the eightieth hospital day there was a rapid onset of pleural pain in the right chest anteriorly followed after a few hours by the coughing up of dark red changed blood The temperature remained between 98 and 100°F Four days later the serum protein was 6.15 gm per 100 cc., the albumin 2.99 gm., and the globulin 3.16 gm The serum nonprotein nitrogen was 24 mg per 100 cc Her diarrhea had increased in severity On the ninetieth hospital day she became completely disoriented Three days later she complained of sharp stabbing pain in the right upper quadrant of the abdomen Her feet were cold, cyanotic and slightly edematous Dullness and rales were present in both lung bases She gradually failed and died on the one hundred and eighth hospital day

Differential Diagnosis

Dr. Alfred Kranes I must confess to a good deal of bewilderment at the series of events that took place in this patient and I am not at all confident that I have a very plausible explanation for the various episodes following her discharge after the first admission The events leading up to the first admission are not too difficult, but after that, things became a little complicated

Her first admission consists essentially of a slowly progressive bloody diarrhea with a physical examination that is essentially negative except for rectal tenderness, the finding of a stricture 7 cm above the anus, and some swelling of the left leg The laboratory work on that admission does not contribute much of importance except for the statement that a positive Frei test was discovered. As regards the diagnosis of syphilis eight years before admission, it is not at all clear how that diagnosis was made Nothing is said regarding her serological tests at that time, and it is interesting that after approximately one year of treatment she presented at this admission no clinical or serological evidence of syphilis One wonders whether she *actually did have syphilis* I think we have to assume that probably a positive Hinton or Wassermann test was found eight years before

Dr. A Thornton Scott It had been previously positive

Dr Kranes It is of some additional interest that there was swelling of the same leg that had previously been the site of the gumma What relation there is if any between these two events is purely speculative, although there is such a thing as syphilitic thrombosis

So far as the cause of her diarrhea goes, the only statement pertaining to etiology during the first admission, and even during the second admission is the one about several positive Frei tests with mouse-brain antigen I am not sure how much significance to put on that Certainly I can not put any on the tests that were done during the second admission Evidently they were not sure either, otherwise they would not have repeated them so often

Dr Walter Bauer That is not quite fair They were done on Dr Scott's suggestion feeling that there was some evidence that repeated injections

of the antigen in a series of cases at the Boston City Hospital had been of some therapeutic help The repeated injections were given for this reason

DR KRANES Were they injections or skin tests?

DR SCOTT They were given with the same technic as that of the skin test but at frequent intervals and with only half the usual test dose

DR KRANES It is peculiar that no statement is made regarding the size of the reaction during the first admission, that is, the size of the erythema If it was no larger than 2 or 3 mm, as was the case during the second admission, I do not believe one can place definite reliance on that as a positive test, particularly with mouse-brain antigen There is evidence that this particular type of antigen is somewhat unreliable and gives a good many false positives It would be exceedingly interesting to know how large the reaction was which was considered positive

DR SCOTT Mouse-brain controls, which were negative, were done at the same time, whereas in the test area the induration, not the erythema, measured 6 to 8 mm

DR KRANES As you can see I am shying away from the diagnosis of lymphogranuloma inguinale despite the facts that this patient had a rectal stricture and that according to the x-ray film the process was confined almost exclusively to the rectum and sigmoid Although in addition she had had syphilis, which is perhaps presumptive evidence that the lesion may have been lymphogranuloma inguinale, I am not satisfied that that is the correct diagnosis It is true that people with lymphogranuloma inguinale do have bloody diarrhea, but it is not a very common symptom If we exclude lymphogranuloma we have no further clues regarding the etiology Nothing is said regarding studies on the stool for amebae or tubercle bacilli, and I am surprised also that no proctoscopic examination was done Perhaps it could not be done because of the narrow caliber of the rectum and the pain that it may have produced

DR. SCOTT It was done in the Out Patient Department by Dr George S Speare, who demonstrated stricture, some ulceration and considerable thickening of the rectum

DR KRANES We can be sure at any rate that she did have an ulcerative proctitis of some sort What the etiology of that was, I think is quite obscure The only etiologic clue is the positive Frei test, which I am going to discard and say that she probably did not have lymphogranuloma inguinale If one discards that, and there is no evidence for tuberculosis, amebiasis or malignancy, one has to fall back on chronic ulcerative colitis of unknown etiology, the idiopathic type, which will also produce everything described here. It could account for the rectal stricture, so that without any further statements about the bowel I shall guess that she had chronic idiopathic ulcerative colitis Her course during the second admission does not cast any additional light on the intestinal lesion except that apparently it grew worse, and I think one can presumably infer that this lesion at the time of death involved more of the bowel than it did during the first admission I think that even during the first admission there is some evidence by x-ray that the lesion was not confined solely to the rectosigmoid Have we the x-rays, Dr Holmes?

DR GEORGE W HOLMES We have films of the chest, but not those of the bowel

DR KRANES The x-ray interpretation leads me to believe that more of the large bowel was involved than the rectum because of the statement about the haustral markings and the mucosal pattern in the transverse colon

The first curious event following her discharge is the statement about "pleurisy and effusion" Just how that diagnosis was made, we are not told We do not know what her symptoms were whether it was confirmed by x-ray or whether they did a chest tap We simply have to take that statement at its face value for what it is worth In addition, one would like to know what side of the chest was involved Nothing further is said about it The next thing that occurs is an attack of vascular occlusion involving the fingers of the right hand Whether that was due to local thrombosis or embolism one cannot say, but it apparently improved Then this numbness and circulatory disturbance of the right leg took place With the right hand and right leg involved one thinks of some cerebral lesion, but there is very little to confirm such a diagnosis, and I think one is justified in assuming that the manifestations are of a peripheral nature, as subsequent events seem to show

The physical examination on the second admission, except for the vascular occlusion in the right hand and edema of the legs, is essentially negative One would like to know what the blood pressure was during the second admission, because of the possibility that the embolus in the right arm may have been thrown off from a mural thrombus following coronary thrombosis There is not much evidence for that to be sure, but if the blood pressure had dropped considerably it might be a point in favor of it

DR TRACY B MALLORY The blood pressure was 130 systolic, 90 diastolic, on this final admission

DR KRANES That is essentially the same as at the first admission

So far as the laboratory work goes we have a moderately severe microcytic hypochromic anemia and leukopenia, with depression of the polymorpho nuclears all of which can be explained on the basis of chronic blood loss One does not have to postulate any other type of blood dyscrasia here, and there is ample evidence of chronic blood loss in this patient The rest of the laboratory work does not contribute very much The Takata Ari and the formol-gel tests do not help us at all.

May we have some more information in regard to the x ray findings in the chest on the second admission?

Dr Holmes The films have been put in chronological order They were taken in Janu ary, February and March In January the left border of the heart is a little prominent It looks as if she might have some hypertrophy of the left side of the heart The left lung field is slightly smaller and less brilliant than the right, with out any definite explanation for it but that seems to have increased as time went on This January film was apparently taken at 7 foot distance, and this February one very likely was a portable film so that the increase in the size of the heart is of no significance, but I do think the change in the size and character of the density in the left lung may be of some significance since it appears to be increasing In March we have a marked change the diaphragm, while it was rather high in all the films, then became extremely high on both sides. The process on the left is obscured by the heart and high diaphragm On the right there are the characteristic triangular areas of dullness at the periphery which have appeared since the last ex amination

Dr. Kranes Could this dullness at the left base be due to an old pleurisy?

Dr. Holmes Anything that would interfere with the complete expansion of the lung would cause such a picture—even pain, although the diaphragm does not seem to be unusually high I do not believe thickened pleura in itself would produce an increase in density

Dr. Kranes Do you think the scoliosis could have anything to do with that? The interspaces are narrower on the left than on the right

Dr. Holmes That is a good observation Scolio- sis might make some difference in the brilliancy of the two sides, but I interpret this as being an increase in addition I may be wrong It may be the apparent differeoce is due to the way the films were taken I should not put a great deal of weight on it, but I thiok it is worth consider ing The last film is the most important

Dr Kranes The x rays do not help me much The patient went along and then had the sec ond episode of vascular occlusion on the right ap- parently due to an embolus which was removed, despite which the arm had to be amputated Then we have this film of the chest taken some weeks after admission. There is no statemeot as to why it was taken or anything about pulmonary signs or symptoms In view of what Dr Holmes has told us these findings of dullness at the left base may not be so important as they first appeared on reading this sheet

Then she developed a sore throat followed by typical symptoms of pulmonary infarction, — pleural pain aod bloody sputum,—apparently con firmed by the last x ray I think there can be lit tle doubt about that

It seems to me that the problems duriog the second admission are to try to explain the process that was going on io her chest and to find the cause of the vascular occlusion in the right arm

So far as the chest goes, there are three things to explain the history of pleurisy with effusion, the dullness at the left base, and the episode of pleural pain and bloody sputum which seems quite typical of pulmonary infarction The so-called pleurisy with effusion may also have been a pul monary infarct. We know nothing about the events concerning it There is evidence that what ever it was had cleared up in the interim Then some shadows appeared at the left base which may not be of any significance. Following this a typical pulmonary infarct developed, so that I shall save time hy concluding that she did have multiple pulmonary infarcts the source of which was most likely a thrombus from the pelvic or leg veins There is some evidence that she did have pblebitis of the left leg

So far as the vascular occlusion in the right arm goes, that puzzles me a great deal There are two general reasons why an artery should be occluded One is local disease of the blood vessel itself, aod the second an embolus. Al though the statement is made here that an em bolus was removed, I am not sure that a surgeon removing a clot from a vessel can tell whether it arose there or came from some distant focus, so I think we have to consider local vascular dis- case The two diseases to be considered are, first an ulcerated atheromatous plaque with thrombosis and, secondly, a syphilitic endarteritis, although there is no serological evidence of syphilis The fact that she had two episodes in the same gen eral vicinity would argue more in favor of a local vascular lesion because it would not seem very likely that lightning, in the form of an embolus, would strike twice in the same place. Another argumeot in favor of local vascular disease is that the circulation did not improve appreciably after

the embolus was removed But despite the things in favor of a local lesion, I am going to assume that probably this occlusion was due to an embolus If we assume that, we have to postulate some source, most likely the heart I cannot quite see what type of heart disease this patient would have that would give her an embolus The three types that do are rheumatic heart disease, coronary thrombosis and subacute bacterial endocarditis There does not seem to be much evidence for any of these Certainly there is no evidence of valvular heart disease So far as coronary disease goes there is the episode one month before admission with pain in both shoulders followed by pain down the right arm Whether that could be interpreted as coronary thrombosis I do not know, but I rather think not Three days later she developed an occlusion of the artery of the right arm which is a little early for a mural thrombus to be set free and in addition she developed another a little over six weeks later, which also is not quite consistent with a mural thrombus from a coronary thrombosis Also she had a normal electrocardiogram on admission I think one can make out a little better case for such a type of heart lesion as bacterial endocarditis She did run a septic type of temperature She had apparently a pulmonary infarct She had some enlargement of the heart, and although I do not find any evidence of pre-existing heart disease on which to engraft a bacterial endocarditis, we do know that it can take place even in the absence of pre-existing heart disease However, this means postulating another disease in addition to the two diseases we have already mentioned, ulcerative colitis and thrombosis with pulmonary infarction

One would like to explain the whole thing on one basis and the only way I can do that logically is to assume that the patient had a patent foramen ovale or patent interventricular septum, with perhaps a passage of blood clot through the foramen into the left side of the heart Even that has serious objections In the first place it is rather rare and in the second place, even assuming the patency of a foramen ovale, it is difficult to see how a clot could go from the right side of the heart to the left The pressure in the right auricle is considerably lower than that in the left and the clot would therefore have to swim against the stream, so to speak The only way this could occur is to assume that pulmonary infarction had taken place Occlusion of several branches of the pulmonary artery, even small branches, may so increase the pressure in the pulmonary circuit that the pressure in the right auricle may exceed that in the left and in such a case an embolus could travel in the direction mentioned In this case we do have some evidence of pulmonary infarction and it therefore seems to me that this explanation is as good as any of the others, although I must say that I do not have too much confidence in it

In conclusion I shall say that the patient had chronic idiopathic ulcerative colitis, thrombosis of the pelvic and leg veins, pulmonary emboli, emboli to the right brachial or axillary artery, source undetermined, but possibly due to a paradoxical embolus through a patent foramen ovale

DR BAUER I saw this patient at the time of first entry and she was on the ward when I came on visit at the time of the second entry We never satisfactorily explained the exact source of what we had interpreted as representing an arterial embolus The lesson I learned from this case after seeing the autopsy was it is extremely dangerous to rely on one lone laboratory test, particularly if you allow it to swing you in favor of a diagnosis for which you have very little evidence In this case there was good evidence favoring the diagnosis of another disease yet we allowed a positive Frei test to mislead us When I came on the service last year I was told the patient had lymphogranuloma inguinale with a rectal stricture causing a diarrhea I did the rectal examination and felt certain that she did have a rectal stricture These findings plus the positive Frei tests led me to accept the diagnosis of lymphogranuloma inguinale. I thought when she was discharged to Dr Mallory's department that she had had a rectal stricture due to lymphogranuloma inguinale

DR A THORNTON SCOTT I felt the same way because when she first came to the Out Patient Department she had the picture in the rectum of proctoscopic examination of lymphogranuloma inguinale, and we had a barium enema done at that time which was said to be consistent with it or with localized ulcerative colitis with stricture I was perhaps blinded by that and went on with that same impression during both admissions I have no explanation for the other thing that happened to her but I was quite sure on the evidence of the skin test that she had lymphogranuloma

CLINICAL DIAGNOSES

Lymphogranuloma inguinale
Tertiary syphilis
Pulmonary infarction
Mesenteric thrombosis
Embolus, right arm, amputation

DR KRANES'S DIAGNOSES

Chronic idiopathic ulcerative colitis
Thrombosis of pelvic and leg veins
Pulmonary embolism and infarction

Embolus, right arm, ? paradoxical through patent foramen ovale.

Anatomical Diagnoses

Chronic ulcerative colitis with extension to ileum
Empyema, interlobar, right.
Bronchiectasis, right middle lobe
Pleuritis, chronic fibrous
Scoliosis
Cholelithiasis
Arteriosclerosis, slight coronary aortic and cerebral
Operative scars amputation of right forearm arteriotomy, right brachial

Pathological Discussion

Dr. Mallory Dr Kranes has made a valiant effort to tie this all together in one diagnosis and he has succeeded a little better than we could at postmortem We had to leave a number of things unexplained She did have unquestionably a diffuse idiopathic ulcerative colitis which extended the entire length of the bowel and into the ileum We were a little skeptical about the rectal stricture. When we cut open the rectum it fell widely apart and we could not find the stricture so we are inclined to think that the obstruction must have been due to spasm I am not sure that those who felt it clinically are in agreement with us yet, however At any rate after death it was hard to demonstrate a stricture So I am with Dr Kranes in believing that the disease in the colon was ulcerative colitis and not lymphogranuloma inguinale. We know lymphogranuloma can involve the rectum, and we have seen one case where it extended up to the sigmoid We do not know how much farther it may extend I do not know of any reliable case reports proving that it can involve a large portion of the colon Whether this patient bad had lymphogranuloma inguinale in the past I cannot say, but we found no evidence of it

The heart was entirely negative. The shadow in the left side of the chest interpreted as an infarct, was a localized empyema about 6 or 7 mm in diameter between the upper and the middle lobes. Cultures from it showed an abundant growth of beta hemolytic streptococci A section of the lung tissue immediately beneath that showed a chronic inflammatory process which conceivably could be a healing stage of a septic infarct but to my eye it looked more like bronchiectasis. We could not find the source for the embolus It is conceivable that a pulmonary vein in the neighborhood of the local area of disease in the lung may have been the source, but with very careful search nothing was found We also examined the foramen ovale with care and it was not patent.

Dr Kranes Were the brachial and axillary arteries investigated?

Dr. Mallory No

CASE 25282

Presentation of Case

First Admission A sixty-eight year-old white woman was admitted complaining of epigastric pain of two days duration

Twenty-eight years before admission she had "colic" with clay-colored stools, but no vomiting or jaundice. A cholecystostomy was done and one stone removed from the gall bladder Subsequent to the operation she passed a number of stones in the feces which were described as small and rough Her symptoms persisted and one year later a second operation was done which consisted only of lysis of adhesions She had no further symptoms until a few months before entry when she developed some tenderness in the right upper quadrant and in the mid abdominal region Three days before entry she noted the onset of a watery diarrhea having about ten stools per day These were clay-colored There was no blood On the following day she had epigastric distress and abdominal distention, but this was not so severe as the colic of previous years One day later she seemed forgetful and erratic The pain was increasing She did not vomit and had no chills, no pain associated with fatty foods and no jaundice For the past eight years she had been taking a digitalis derivative for her heart following an attack of extreme exhaustion and weakness. She had had dyspnea on exertion and an occasional cough on waking in the morning but no pain, no nocturnal dyspnea and no edema Two years before admission she had been treated for scurvy Her mother had died of heart disease The patient denied the use of alcohol The past and family histories were otherwise noncontributory

Physical examination showed a well-developed obese, short statured woman in no obvious discomfort The skin and mucous membranes were pale and pasty The heart was slightly enlarged Over the whole precordium there was a loud rough systolic murmur, heard best at the aortic area A- was accentuated The blood pressure was 165 systolic, 70 diastolic. The abdomen was obese and distended, with marked tympany over the upper abdomen Peristalsis was explosive and hyperactive. There was tenderness over all the upper abdomen most marked over the right upper quadrant scar The extremities showed no edema

The temperature was 100°F, the pulse 90, and the respirations 21

The urine examination showed a slight trace of albumin, 20 white cells and 10 epithelial cells per high-power field and numerous bacteria The blood showed a red-cell count of 3,160,000 with 60 per cent hemoglobin, and a white-cell count of 9000 with 70 per cent polymorphonuclears The blood smear showed moderate variation in the size of the red cells, but no cells larger than normal The platelets were normal A blood Hinton test was negative The serum nonprotein nitrogen was 18 mg per 100 cc The bleeding time was four minutes, clotting time twelve to twenty-three minutes Clot retraction was normal The serum bilirubin was 3 9 mg per 100 cc Six stool examinations were guaiac negative, one guaiac positive All were positive for bile A liver function test showed approximately 85 per cent of the dye in the serum An electrocardiogram showed a P-R interval of 0.25 second T_1 was diphasic, S-T_2 and S-T_3 sagging Lead 4 was normal There was partial A-V dissociation

X-ray films showed no visible stones in the gall bladder A Graham test showed that the gall bladder was not visible after taking the dye

On the fifth hospital day duodenal drainage yielded only yellow fluid Two days later her liver edge was palpated 5 cm above the umbilicus The spleen was enlarged She had slight edema of the legs and back On the tenth hospital day she was discharged unimproved

Second Admission (four months later) The patient stated that one month before re-entry she had diarrhea, clay-colored stools and fever Three days before admission she developed painless hematuria For two days the urine was red, and on the day of admission was pale pink She had had no pain and no weight loss There had been no dysuria and no increased frequency Nocturia of two to three times had remained unchanged Physical examination had not changed since her discharge four months previously The blood pressure was 110 systolic, 55 diastolic The temperature was 98 6°F, the pulse 85, and the respirations 22 The urine examination showed a slight trace of albumin, an occasional red cell and 10 white cells per high-power field and numerous bacteria The blood showed a red-cell count of 3,240,000 with 55 per cent hemoglobin, and a white-cell count of 7600 with 62 per cent polymorphonuclears A retrograde pyelogram was negative Cystoscopic examination showed several petechial hemorrhages in the bladder mucosa She was discharged on the second hospital day

Final Admission (one year later) One week before her final admission she had moderate upper and lower abdominal pain accompanied by a chill The temperature was 102°F The following morning her temperature was normal and she felt much better In the evening she again had upper abdominal pain, more marked on the right side, accompanied by a chill During the next three days there were short periods when she was irrational Her upper abdominal pain continued, accompanied by two to three loose stools during each of the four days before admission She became slightly dyspneic on the third and fourth days of the illness, and the dyspnea slowly increased until entry

Physical examination showed a slightly jaundiced woman who was not responsive to her name There was bleeding from the gums and mucous membranes of the mouth, and also from the vagina or urethra The tongue was dry The chest showed moist rales at both bases The heart was enlarged to the left There was a loud systolic murmur heard best over the aortic and mitral areas, and a diastolic murmur at the apex A_2 was louder than P_2 The blood pressure was 120 systolic, 76 diastolic The abdomen showed slight ascites The liver edge was 3 cm below the right costal margin There was slight tenderness but no spasm over the right upper quadrant There were petechiae over the hands and arms, but these appeared after a tourniquet had been applied The urine examination showed a very slight trace of albumin and many white cells

The blood red-cell count was 3,000,000, and the white-cell count 20,100 The serum nonprotein nitrogen was 40 mg per 100 cc., the serum bilirubin 3 mg, and the carbon-dioxide combining power 56 vol per cent An electrocardiogram showed prolonged A-V conduction The P-R interval was 0.22 second There was slight notching of P_1, P_2 and P_3

An x-ray film of the chest showed no definite areas of consolidation in the lung fields The aorta showed calcification

She remained in coma and died twenty hours after admission

Differential Diagnosis

Dr Chester M Jones This is a most confusing picture because it includes so many symptoms, so many signs and some very definite positive laboratory tests There are certain factors that I think can be taken as facts—one is that she was markedly arteriosclerotic In the physical examination the vessels were felt to be sclerotic She had, I should say, the signs and symptoms of arteriosclerotic heart disease Her electrocardiogram also suggests that this is so There may have been marked coronary narrowing At one time

she had a fairly high systolic blood pressure which subsequently fell to a lower level, and there was calcification of the aorta by x-ray. So we can state definitely that we are dealing with an arteriosclerotic individual who had arteriosclerotic changes in the heart capable of causing signs and symptoms. We also, I think, can accept the fact that the liver was very definitely involved by some sort of intrahepatic disease. I am going to assume that the liver was large. I am painfully aware of the fact that one cannot always tell how large the liver is, because just the other day I thought a liver was extremely small and found that it was larger than normal. It seems to me, however, one has to say in this case that it was enlarged. The spleen was palpable on one occasion. When she was first seen she certainly had little jaundice, only 4 mg. of bilirubin, yet there was 85 per cent dye retention, which would suggest very definite intrahepatic disease in the nature of some type of cirrhosis. There was a marked increase in dye retention out of proportion to the jaundice. Furthermore, bile was noted in the specimen removed by duodenal drainage. We are led to believe that the sediment was negative. There was a fairly free flow of bile into the duodenum. The stools all contained bile, so that this is not a jaundice due to extrahepatic block, and I think that one has to say we have an arteriosclerotic individual who has intrahepatic disease of some sort.

In the past she had gallstones. A cholecystostomy only was done. Subsequently she probably passed stones, and there is always the possibility that prolonged low grade infection in the gall bladder and ducts may be associated with intrahepatic disease in the nature of biliary cirrhosis. I should think it was rather unusual to have a biliary cirrhosis produce its first symptoms twenty-eight years after the original operation, however. She had some serious disturbance with the clotting of blood. On the first admission her bleeding time was four minutes, which is long if the test is correctly performed and the clotting time twenty three minutes, which is again prolonged if the test is reliable. Of course any patient with intrahepatic disease, with or without jaundice, may have such abnormalities. It is possible that that might have been on some other basis, but I think it is fair to assume that it was on the basis of liver disease. The positive Graham test to my mind cannot be interpreted with 85 per cent retention of the dye. It is impossible to believe that another dye of similar nature could be excreted in proper time to give an adequate picture of the gall bladder. On the other hand we know she had gall-bladder disease in the past with stones, and have every reason to believe she had chronic cholecystitis and a small contracted gall bladder, but I do not see how we can adequately interpret the present x-ray findings in this case.

So far it seems as if the picture was relatively straightforward at the time of the second admission. There is one element, however, which I cannot explain, namely the hematuria. The cystoscopy showed petechial hemorrhages in the bladder mucous membrane and no evidence of stone and I am wondering whether the hematuria was due to something equivalent to scurvy or the type of mucous membrane with spontaneous bleeding that you get in severe intrahepatic disease. When she came in the second time she may have been slightly jaundiced but there is no note that would indicate anything more. The red count was the same, and the anemia might have been entirely on a nutritional basis. Possibly it was associated with cirrhosis, or there may have been more bleeding than is indicated but I do not see how we have a right to assume it. The third admission was a year later. She again had upper abdominal pain, chills and fever, and rapid ingravescence. She had some evidence either of myocardial failure or of nutritional edema, because she had ascites and peripheral edema, as well as pulmonary edema, which could occur on either basis. She was not responsive, and finally died.

The physical examination revealed that the mucous membranes bled from at least two places, from the gums and the buccal mucous membranes and from the vagina or urethra. The exact source was not determined in the latter case. The blood work was not carried far enough to show whether the clotting time was prolonged. She was jaundiced, and it is my belief that she may well have had spontaneous bleeding from the mucous membranes, either on the basis of intrahepatic disease or on the basis of vitamin-C deficiency or both. Certainly patients with cirrhosis and arteriosclerosis often do not take any care of themselves; do not eat well and have a deficient diet. We have various manifestations of deficiency disease. She was known to have had scurvy before her first admission. It seems that the bleeding may have been complicated by a nutritional disturbance and that in turn may have been associated with intrahepatic disease. The other possibility that should be mentioned is that of a terminal infection on an already damaged heart, in other words an arteriosclerotic heart with a terminal bacterial endocarditis which could give her chills and fever and possibly petechial hemorrhages. The petechiae on the arms certainly were due to tourniquet pressure. Another point is that a very definite diastolic murmur appeared which was not present before. That should be noted as a change. It may have

been associated with a terminal event, or it may mean that in the course of a year the heart became decompensated, with a relative mitral insufficiency

I can only make a guess as to the autopsy findings My belief is that this patient had intrahepatic disease, with a fairly large liver and spleen, and that it was a form of cirrhosis I think she had arteriosclerotic heart disease, and mention, just as a possibility, the question of endocarditis I am sure she had a nutritional disturbance, with a protein deficiency and quite possibly a vitamin-C deficiency, to explain some of the symptoms That does not take care of the whole situation Then the question arises, With pain and diarrhea should one include diseases of the pancreas or a stone in the common duct that was never passed, something that corresponds to an intermittent hepatic fever and slight jaundice with an associated pancreatitis? One can only speculate about that If she had cancer, which I doubt, with metastases to the liver, it just does not fit into the picture The striking retention of dye, as well as the slight jaundice, is not the picture of secondary malignancy in the liver, either from the pancreas or the gastrointestinal tract, if one has jaundice, as a rule it is very intense, or if it is slight, there is not much dye retention Usually metastatic carcinoma in the liver is a spotty affair and does not interfere too seriously with liver function The diagnosis of pancreatitis I am not capable of making, certainly not of the subacute type There is another point cirrhosis alone could give pain and fever in intermittent attacks That is not too uncommon, so that while there are a great many questions that might be raised the best I can do is to say that she had generalized arteriosclerotic involvement of the heart, possibly a superimposed terminal infection, intrahepatic disease of more or less long standing, which I should think would be covered by the term cirrhosis, and deficiency as a result of all these things

Dr J H Means One would like to know more about the terminal situation She was in coma There is no neurological examination mentioned I do not know how long she had been in coma She had been irrational a day or two before She evidently had had an infection I wonder what was going on intracranially, whether she had had a cerebral vascular episode or whether the mental picture represented the effect of infection in a woman with a good deal of cerebral arteriosclerosis, which may produce some strange mental pictures I also was interested in the statement in the first part of the history that she had been treated for scurvy One would like to know why, and get more history That is an interesting statement

Dr Tracy B Mallory I have no more information available on that The person who, I believe, made the diagnosis of scurvy and outlined the treatment was Dr William B Castle, so I presume that the observations were reliable

Dr Wyman Richardson I spoke last week a little bit scoffingly about cardiac cirrhosis, but I notice this is a long cardiac history and wonder if Dr Jones would consider that as a possibility in this case, that is, putting the cirrhosis on a cardiac basis

Dr Jones I tried to on reading the case over the first time I believe there is such a thing as cardiac cirrhosis I remember asking about it at a meeting of the American College of Physicians at a round-table discussion last year and gathered that it occurs rarely after chronic right-sided failure I should be surprised if it were a case of cardiac cirrhosis

Clinical Diagnoses

Cholangitis
Biliary cirrhosis

Dr Jones's Diagnoses

Arteriosclerosis
Arteriosclerotic heart disease
Cirrhosis of the liver
Bacterial endocarditis?
Nutritional deficiency

Anatomical Diagnoses

Subacute bacterial endocarditis, mitral and aortic valves
Rheumatic heart disease, chronic, and mitral stenosis
Cirrhosis of the liver, atrophic, unclassified
Infarcts of spleen and kidneys
Arteriosclerosis

Pathological Discussion

Dr Mallory The diagnoses made on the wards were very close to those of Dr Jones I think they mentioned the same possibilities that he did, except one They did not, as I remember, consider acute endocarditis The autopsy showed a long-standing, chronic mitral stenosis, with a superimposed bacterial endocarditis, very extensive on both the mitral and aortic valves There were infarcts in the spleen and kidneys We did not have permission to examine the head, but I imagine that the cerebral symptoms which were fairly sudden in onset represented a cerebral embolus The liver was quite small — 1250 gm — and showed a very severe cirrhosis It was very fibrotic and

looked as if it had been small for a long time I am not much more anxious to commit myself as to the type of cirrhosis than Dr Jones was I noticed he was very careful not to

The gall bladder was entirely negative, thin walled and contained no stones The common bile duct was a little dilated but showed no thickening of the wall, so we have nothing to support biliary cirrhosis, which is the type that might have been thought of from the history I think we can be confident that it was not alcoholic, and it presumably dated back to some atrophic process long in the past The esophagus had very extensive varices and she did bleed from them terminally Over 100 cc of fresh blood was found in the small bowel but had not reached the large bowel The hemorrhage must have occurred just a few hours before death The cirrhosis certainly was not cardiac, and although arteriosclerosis was present, it did not seem to be severe enough or to have affected any sufficiently important spot to have been significant in her symptomatology

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ALCOHOLISM

Tuberculosis, syphilis and alcoholism are three of the major problems in public health Tuberculosis has long received the most attention both from the public-health agencies and the public One may point with pride at the work accomplished in the last thirty years toward the goal of the complete eradication of tuberculosis The attack on syphilis is now being pushed at an accelerated pace, thanks to the work of the United States Public Health Service, the state and local agencies, the newspapers and the public The end is visualized, although much work is yet to be done The world is waking up to the fact that it is possible to do away with both tuberculosis and syphilis The treatment of alcoholism, as a public-health problem, has fallen far behind the other two The routine "cure" of the alcoholic is far from satisfactory, and the best method to prevent alcoholism exists only as a vague idea in the minds of a few progressive physicians The papers published in this issue of the *Journal* set a standard of statistical analysis and farsighted reform comparable to the work done in the fields of tuberculosis and syphilis For this reason they deserve concentrated attention and thought

The inadequacy of routine care is well illustrated in the first contribution on the work at the Haymarket Square Relief Station of the Boston City Hospital from 1927 to 1938 Nearly a third of the male admissions were alcoholics, and yet the average period of observation was only one day No attempt was made to study the patient as an individual, and psychiatric treatment, the basis for any hope of reclamation, was not available The second paper, of a larger series, only serves to emphasize these points The treatment of delirium tremens, the most serious form of acute alcoholism was reasonably adequate, as brought out in the third paper, but again, the causes behind the acute situation were not considered The fourth paper calls attention to the traumatic complications of alcoholism, and the fifth report, the causes of death Finally, data are presented on the intelligence of a large number of alcoholics showing that, as a group, they do not vary from the average of the general population Marital disharmony and alcoholism, however, are closely allied These surveys should form the basis for a more adequate program in the fight against alcoholism It is to be hoped that the author and his collaborators will formulate such a program in their future contributions to the subject

NEW DATA ON LYMPHOCYTIC CHORIOMENINGITIS

The virus of lymphocytic choriomeningitis was first isolated at the National Institute of Health by Armstrong and Lillie[1] in 1934 Clinically the disease had first been established by Wallgren[2] in 1925 and described in this country by Viets and Watts[3] in 1929 The isolation of the virus gave new impetus to the study of this disease, and in the

last five years many reports have appeared in the literature both in regard to the description of the disease and to the widespread nature of the virus, the agent having been reported in England France and Japan, as well as many times in this country The disease is a comparatively benign one, no definite fatality having been reported, although one patient died under suspicion before the virus was discovered, a description of the pathological findings was given by Viets and Warren [4]

In the latter part of 1938 Armstrong and Sweet[5] observed two patients in Washington both of whom showed clinical as well as laboratory evidence of lymphocytic choriomeningitis The virus was isolated from both patients, and in the first patient virus neutralizing antibodies were present in the blood In the second patient not only were antibodies found in the blood, but also complete immunity was shown in the blood of the landlady where the patient lived and partial immunity in her husband's blood Protective antibodies were also found in the blood of the brother of the first patient. In addition to this evidence of the virus's having been present without giving clinical manifestations in persons closely associated with patients showing definite evidence of the disease, the virus was also isolated from one of two mice trapped in the home of the first patient and from two of three mice trapped in the home of the second As a control, no infection was found in twenty-one mice trapped in eight different abodes wherein no human case of lymphocytic choriomeningitis had occurred From this evidence Armstrong suggests that the gray mouse is incriminated as a reservoir for lymphocytic choriomeningitis virus, from which man is probably infected

Thus in the course of ten years since the disease was adequately described in this country a virus has been identified as the etiologic agent and the suggestive mode of transmission indicated The disease itself is hardly to be found in the text books of medicine and not a considerable number of authors refuse to admit that such a disease exists. So rapid is the progress of medicine that except for a discovery of major significance, such as the treatment of diabetes with insulin or that of pernicious anemia with liver, the identification of a disease of minor importance only slowly finds its way into a permanent form of medical literature

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1 Armstrong C., and Lillie, R. D.: Experimental lymphocytic choriomeningitis of monkeys and mice produced by a virus encountered in studies of the 1933 St. Louis encephalitis epidemic Pub. Health Rep. 49:1019-1027 1934
2 Wallgren A.: Une nouvelle maladie infectieuse du système nerveux central (méningite aseptique aiguë) Acta paediat. 4:158-182 1925
3. Viets, H. R., and Willis, J. W.: Three cases of septic (lymphocytic) meningitis. New Eng. J. Med. 200:433 1929
4 Viets, H. R. and Warren, S. Acut lymphocytic meningitis J. A. M. A. 108:357 361 1937
5 Armstrong, C., and Sweet, L. K. Lymphocytic choriomeningitis report of two cases, with recovery of the virus from gray mice (*Mus musculus*) trapped in the two infected households. Pub Health Rep. 54:673-681 1939

MASSACHUSETTS MEDICAL SOCIETY

SECTION OF OBSTETRICS AND GYNECOLOGY*

RAYMOND S. TITUS M.D., *Secretary*
330 Dartmouth Street
Boston

ACUTE INVERSION OF THE UTERUS

Mrs. H J S., a twenty-two-year-old gravida II, entered the hospital January 11, 1932, at term She had been in active labor for ten hours.

The family history was negative The patient had always been well. Catamenia began at twelve, were regular with a twenty-eight-day cycle and lasted four days without pain Her last menstrual period was April 1, 1931, making her expected date of confinement January 8 Her previous pregnancy had terminated in a low forceps delivery in March, 1930 This pregnancy had been entirely normal during the prenatal period

On admission her blood pressure was 156 systolic, 90 diastolic. She was delivered spontaneously fifty minutes after entry There were no perineal tears The baby was in good condition The placenta did not show any signs of separation for about twenty five minutes, when the cord was partly extruded from the vagina Gentle manipulation of the fundus completed delivery of the placenta The placenta was closely followed by the inverted uterine fundus, to which some of the placenta was still attached There was a great deal of bleeding, blood loss being estimated at 1500 cc. The remaining area of placental attachment was separated The uterus was thoroughly cleansed and placed back in the vagina, and preparations for immediate laparotomy were made. The blood pressure was not recorded

At laparotomy the uterus was found to be

* A series of selected case histories by members of the section will be published weekly Comment and questions by subscribers are solicited and will be discussed by members of the section.

completely inverted so that both Fallopian tubes were situated inside the funnel With the aid of Allis forceps on either side of the fundus the tubes and round ligaments were gradually everted so that the uterus again resumed its normal shape and size The abdomen was closed in layers, without drainage

The patient's general condition improved slightly following the reduction of the inversion She was given two citrate transfusions, one during and another following the operation By the next morning her condition was good

During the postpartum period the patient had fever, with the temperature up to 102 5°F, but the pulse rate stayed below 100 A medical consultant diagnosed sinusitis She had a foul vaginal discharge On January 15 the hemoglobin was 50 per cent, and the red-blood-cell count 3,850,000 Two weeks following operation the temperature was normal She was discharged on the twenty-seventh day following delivery, with the uterus in normal position and well involuted On February 1 the hemoglobin was 61 per cent, and the red-blood-cell count 4,900,000

Comment It is barely possible that, in this case, manipulation of the uterus to express the placenta may have had something to do with the inversion, particularly in view of the fact that at the time of the inversion the placenta was still somewhat attached There is no note of any attempt to replace the uterus manually In acute cases such as this, such a procedure is often possible, and most authorities believe that at least an attempt should be made before the abdomen is opened

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NERVOUS FATIGUE*

Doctors frequently see people who are in sound physical health and yet who complain that they get tired very easily Some of these people say that the least exertion beyond a very limited amount of activity may exhaust them completely Others say that though they are able to get through their daily tasks everything is an effort and that they are conscious of feeling tired most of the time. It is not always physical work which results in this abnormal fatigue. Sometimes the individual gets tired even if he is doing something that would ordinarily be considered a pleasure.

Now we know that fatigue or tire is a perfectly normal thing for any healthy person Most of us are tired after a few sets of tennis, or after a long walk, or after a day spent in seeing a world's fair, or after a day of hard work. But from this kind of fatigue we recover fairly quickly We know, too, that certain physical diseases, such as tuberculosis, heart disease or anemia, may be characterized by fatigue as one of the symptoms But the strange thing about the kind of fatigue which is the subject of this talk is that no physical disease is present, the fatigue comes on too easily and lasts too long The amount of exertion which preceded it is not enough to account for it, and just resting does not do much good This kind of fatigue is commonly known as "nervous fatigue."

The question we should like to try to answer is, What causes nervous fatigue if there is nothing wrong with the body? There are various causes, but the question can be answered in a general way by saying that nervous fatigue is a sign that something is wrong in the individual's way of living He is, in some way, out of tune with the environment in which he lives or there may be some strong emotional need which has not been satisfied, or some thing bothering him which he cannot seem to settle.

One rule of thumb which will be of help in discovering the causes of nervous fatigue in an individual is to consider what there is too much of or too little of in his round of daily living We human beings are so made that we require balance in our daily life Is there too much monotony in the person's life? Has he, on the other hand, become too dependent on excitement, jumping from one thing to another? Does he work too much or not enough?

The woman, whose life, year in and year out, consists of household duties and the care of growing children, with little opportunity for fun, is liable to lead a dull existence which becomes fatiguing from its very monotony She needs the company of stimulating friends or the chance to go to the movies now and again If she lives in the city she should be able to go out into the countryside if that appeals to her, or if she lives in the country she needs the fun of an occasional trip to the city, even a night club if it holds any interest for her

On the other hand, the woman who leads an active social life, with numerous engagements every day and parties several nights a week, may become too dependent on excitement and stimulation and may find herself too tired to accomplish anything that requires close attention She has energy only for the pastimes which give her pleasure, and as time goes on she may find even these fatiguing

Change and diversion from the activities which take up the largest part of our time, whether these activities be work or so-called pleasure, are important in avoiding nervous fatigue. It is interesting, however, that the more we like what we are doing the longer we can apply ourselves before we are aware of feeling tired In fact, when we are really interested we do not think of applying ourselves, our attention is held almost automatically and we do not like to stop Unless we become "hipped" on fatigue, so that we exaggerate the feeling, we are likely to have the energy for doing what we really want to do A boy may become sleepy and tired after an hour of study, but in some remarkable way has the energy for skating or skiing for hours at a time And especially are we able to go on doing almost indefinitely anything in which we excel and which, at the same time, brings us praise and admiration from other people. Successful opera stars, in spite of the great expenditure of energy required of them, do not collapse from fatigue.

An important consideration in avoiding nervous fatigue is to be sure that we are suited to our occupations Too many people are misled by ambition and undertake enterprises or work for which they do not have the ability or equipment They may struggle along for a while with determination, but as it becomes clear that their measure of success is not and probably never will be equal to the amount of effort expended the road ahead seems endless, and even temporary rest by the wayside does not revive them sufficiently to make them able to carry on

* Green Lights to Health broadcast given by Dr Vernon P Williams on Wednesday May 3 and sponsored by the Public Education Committee of the Massachusetts Medical Society and the Massachusetts Department of Public Health

Fatigue is often the result of emotional disturbances. Human beings are fundamentally emotional not rational and it is the emotions which are the driving forces behind most of what we do. It is the nature of our emotions to want satisfaction or fulfillment, and when for one reason or another our emotional strivings are blocked or thwarted a situation of what we call frustration may occur. Energy is then not properly used and the result is often a sensation of fatigue or exhaustion. One of our greatest needs is a suitable outlet for our affections. We are attracted to other people and we fall in love because we need each other. It is a rare person who is self sufficient in this regard. If we do not find someone who responds to our offer of affection a fundamental emotional craving in our natures goes unsatisfied. Unless we can accept this frustration after we reason it out, we live under strain and tension which frequently are causes of fatigue.

Besides this desire for the companionship and caring of another person is the strong urge for making the most of ourselves. Not only do we want friends who like and appreciate us, but we want to think that we exert influence and power ourselves at least in a small way. We want to believe that what we do in the world is needed and is of value to others. If we do not believe this an adequate stimulus and interest in living is lacking and the daily round may be boring to the point of fatigue. We must be careful however with our selfish ambitions that we do not ask for too much. The person who has become accustomed to success in every direction will find it difficult to call a halt when he meets a situation to which his abilities are not adapted. If the halt is not called, there will be a wasteful output of energy which may lead to frustration.

Some people get into the habit of putting off making a decision in both big and little problems. They have difficulty in making up their minds. They seem to think that waiting just a little longer will enable them to make a better decision but this is not so and the longer they wait the harder it is for them to make the decision. Such prolonged indecision is a strain and is fatiguing. Learning to say "yes" and "no" decisively after a reasonable amount of thought, gives us a sense of well-being and we are in command of ourselves.

If then, we are burdened with a sensation of fatigue which is not due to physical disease we should look inside ourselves to discover what is wrong in our way of living. If emotional problems and worries hang heavily on us, we should make what changes we can in our situations. If no reasonable changes can be achieved, we should make a clean-cut decision to accept the situation without further brooding over it. "What cannot be cured must be endured." In this way we save energy and can turn our attention to constructive interests. Our lives are like houses with many rooms and it is hardly sensible to spend all our time in only one of the rooms. If the plaster is falling off the ceiling in one of the rooms, let's do what we can to fix it but not waste time and energy wishing that the plaster were not falling.

* * *

Q What you say about inefficiency in living and emotional problems as causes of fatigue is interesting but is it not true that overwork or working too hard can in itself cause the kind of fatigue you have been talking about?

A If the person really cares about his work, if it is the kind of work for which he is suited neither too difficult nor too easy for him and if he is not doing it only to keep the wolf from the door there is not much chance that he will find it fatiguing. Some people work *hard even feverishly, to keep themselves from thinking* about or facing emotional problems. This is not a satisfactory method of escape. The problem there is still unsolved. If the problem has been faced clearly and a decision has been reached in regard to it then the person can work hard because he has decided that it will do no good to keep brooding over what might have been or might be if the world were just as he would like to have it. No matter how interesting the work, relaxation and diversion from it are necessary to prevent the individual from becoming stale. A few geniuses on fire with enthusiasm seem to be able to keep from getting stale without much of any relaxation or diversion but they are the exceptions.

Q Do people differ in some fundamental way in the amount of energy they have at their command?

A. Yes I think there can be little question about that. No two human beings are exactly alike in every way. We differ in temperament, in intellectual ability in our sense of humor in physical build, and so forth. And we probably differ in how much energy is at our disposal. But we must not be misled by the appearance of weakness. We often see frail-looking people who do many times the amount of work accomplished by well nourished healthy-looking people. If we want something strongly enough and if getting it seems reasonably possible great quantities of energy are apt to be available for its attainment. It is the people who are brooding over past disappointments, who will not let the past go and who do not look at the present or future within the limits of what is possible for them who become weary of existence. As a poet said "Rest is not quitting this busy career: rest is the fitting of self to one's sphere."

Q Can you explain a little further what you mean by emotional disturbances and frustration as causes of fatigue?

A. All of us are made up of bundles of wants or desires. The closer we come to having these wants or desires satisfied the more comfortable and secure we feel. We want enough money so that we shall not have to worry about food, shelter and clothing. We want the love of someone else to satisfy the natural sex instincts and the desire for companionship which will help to keep us from feeling alone. We want friends and success in our work. If we cannot get what we want in these ways we become unhappy. If nothing can be done about satisfying a particular want we do well to determine to make the best of it. Otherwise the emotional turmoil created by the dissatisfaction burns up energy in a futile way and fatigue results.

Q I suppose we all have worries strains and problems, and yet all of us do not become tired. Why is that?

A. It depends upon how we handle the situation. That is why it is important to teach children at the start that they should not always expect to have everything their own way. If, in early years, they become used to self-control and to putting up with not getting everything they want, they will form the habit of adjusting themselves to the frustrations which we all meet throughout our lives. Another point is that because of individual differences in make up people react in various ways to emotional difficulties. If these difficulties are not dealt with properly. Instead of becoming fatigued some people get headaches, or develop digestive troubles or sleep poorly or get the "jitters," or have palpitation.

Q You said that sometimes people feel tired even if they are doing things that they consider a pleasure. Why

would they become tired if they are doing what they want to do?

A That often occurs when a person is paying too much attention to the way he feels Since fatigue is an unpleasant sensation, sometimes the individual is too much on the lookout for it. He thinks if he feels tired it is a sign that he needs rest. The more he watches himself, the more aware he becomes of any feeling of fatigue. It becomes a habit for him to detect this feeling, and then he becomes so accustomed to watching himself that the feeling may come on no matter what he is doing Any one of us is often tired, but we know it is of no importance and go ahead with what we are doing As William James pointed out in his excellent essay on *The Energies of Men* "Fatigue is apt to pass away if we work through it to the store of energy beneath"

Simply because fatigue of the nervous kind cannot be cured with a pill is no reason to become discouraged about it. We should not approve of a business that is run inefficiently and we should not approve of living halfheartedly, when a little investigation may offer a solution One of the oldest and wisest of sayings is that the most important thing in life is to learn to know yourself

DEATHS

LEGG—Arthur T Legg, M D, of Brighton, died July 8 He was in his sixty sixth year

He received his degree from the Harvard Medical School in 1900 and was a fellow of the Massachusetts Medical Society and the American Medical Association A member of the Harvard Infantile Paralysis Commission, he was assistant professor of orthopedic surgery at the Harvard Medical School Dr Legg had written several books on children's diseases and was surgeon at the Children's Hospital, Boston, and consulting surgeon at the Chelsea Memorial Hospital, Lakeville State Sanatorium and the Massachusetts Hospital School

Among his affiliations were memberships in the American Orthopaedic Association, the American Academy of Orthopaedic Surgeons, the American College of Surgeons and the New England Pediatric Society

MATHEWSON—Frank W Mathewson, M D, of New Bedford, died July 6 He was in his forty-ninth year

He received his degree from the Boston University School of Medicine in 1914 and was a fellow of the Massachusetts Medical Society and the American Medical Association

His widow, two children and his father survive him

CORRESPONDENCE

AN APPEAL

To the Editor Five copies of the June issue of the *Worcester Medical News,* which was distributed at the annual meeting of the Massachusetts Medical Society, are wanted

Any member who has a copy will be conferring a favor if he will send it to the librarian of the Worcester Medical Library, Incorporated, at 34 Elm Street, Worcester

Barbara Norwood, *Librarian*

34 Elm Street,
Worcester, Massachusetts

DISTRICT OPPOSITION TO WAGNER BILL

To the Editor We are enclosing a copy of a letter from the Legislative Committee of the Plymouth County Medical Society to Senators Walsh and Lodge and the representatives in Washington from our district

We should be glad to have this letter opposing the Wagner Bill published in the *New England Journal of Medicine* if you believe that it would be a stimulus to other county societies to oppose the Wagner Bill

John J McNamara, M D, *Chairman,*
George A Moore, M D, *Secretary*

* * *

My dear ——

At a recent meeting of the Plymouth County Branch of the Massachusetts Medical Society, the Legislative Committee was instructed by a unanimous vote of the members to request you to oppose the Wagner Bill or Senate Bill 1620

We fully appreciate the fact that medical service to the indigent sick and low income groups can be improved in many communities in the United States We also recognize that certain principles in the Wagner Bill are for the betterment of health among our poorer classes

We are opposed to the Wagner Bill for the following reasons

1 The Wagner Bill is just another federal project which, if enacted, will put all medical practice, hospitals and even drug manufacturers in the United States under federal control

2 The states have not requested government medical aid for the indigent sick It is a new offspring of the imagination of theorists in Washington which is to be "given" to the states under the guise of "grants-in-aid," a method of penalizing taxes on industry and wealth in some states to distribute it in poorer states

3 There are no limits in the bill regarding the income groups to which it will apply The bill apparently proposes to furnish not only free medical care but disability insurance to all classes, whether employed or unemployed

4 It has far greater political potentialities than the WPA, the AAA or any other government relief project because of its application to a greater proportion of the population and its great humanitarian appeal

5 It will completely abolish the private practice of medicine and the right of the patient to choose his own physician

6 It will destroy the incentive to investigation in our hospitals and medical schools and lower the standards of our great private medical teaching institutions

7 It is opposed by the great majority of our 5000 members of the Massachusetts Medical Society and by the majority of over 100,000 members of the American Medical Association

8 We feel that the care of the indigent sick patient throughout the United States is a state problem, to be handled by each state with federal aid, if necessary, but without the federal control provided in the Wagner Bill

The Plymouth County Medical Society requests you to oppose this bill

Respectfully yours,
John J McNamara, M D, *Chairman,*
George A Moore, M D, *Secretary*

REPORT OF MEETING

HARVARD MEDICAL SCHOOL LECTURE

At a special lecture at the Harvard Medical School on Thursday April 20 Dr Frank G Young of the National Institute for Medical Research London, spoke on "The Anterior Pituitary Gland and Carbohydrate Metabolism."

Before discussing his own findings, Dr Young briefly went over the recent advances in knowledge of the inter action of the pituitary gland and the pancreas, promoted especially by Houssay Houssay found that the removal of the pituitary increased sensitivity to the hypoglycemic action of insulin, that the removal of the pars glandularis alone gave this same effect, that hypophysectomy before or after pancreatectomy increased the severity of the dia betes that resulted, that the administration of pituitary substance to hypophysectomized and pancreatectomized animals resulted in an intensification of their diabetes and that the injection of pituitary substance into normal ani mals gave symptoms of diabetes. Two other groups of investigators had observed the last named phenomenon before Houssay Evans had noted diabetic symptoms for nine months these remained for a few months after ces sation of injections but eventually disappeared. Earlier observations had suggested that overactivity of the pitui tary gland as well as its dysfunction led to diabetes.

By means of lantern slides, Dr Young presented charts and graphs showing the results of his investigations. He found injections of pituitary substance caused an insensi tivity to the hypoglycemic action of insulin both in dogs and rabbits. If these injections were continued for some days, subject to certain conditions, there was a rise in blood sugar but still a comparative resistance to the action of insulin. This suggested that the factor that promoted a rise in blood sugar was not the same as the constituent of the pituitary that induced insensitivity to insulin. After a latent period during which the blood-sugar value remained normal the blood sugar rose and symptoms of diabetes manifested themselves. The chief difference be tween this and the diabetes resulting from pancreatec tomy is that in the former type there is the relatively high insensitivity to insulin and also a high liver-glycogen level.

Houssay's observation that the diabetes induced by pituitary injections disappeared or was diminished by fast ing was confirmed by Dr Young, as was Evans's obser vation that diabetic symptoms disappear after a certain period of time. However if the injection doses were progressively increased, the symptoms reappeared, only to disappear later sometimes. During the phases of resist ance to the diabetogenic action of pituitary substance, the dogs still possessed the insensitivity to insulin action and the liver-glycogen values rose. Rapidly increasing the dose of pituitary substance abolished the refractory phase or "resistance" and made it easier to produce a perma nent diabetes in less time. If administration was stopped before a critical point, the diabetes might disappear without becoming permanent. Apparently there was a definite point at which the temporary effect shifted over to the permanent form.

There are three phases of the induced reaction. First, there is the latent phase in which the blood sugar is nor mal and a resistance to insulin develops secondly a temporary diabetes develops with a rise in blood sugar and relative insensitivity to insulin thirdly there is per manent diabetes, which is not associated with any insen sitivity to insulin. The indications of the diabetes becom ing permanent are an increase in ketonuria and a slight fall in body weight. The increase in body weight that occurred following the first injections was interesting but unexplainable. At least some animals gained so much that it could not all be ascribed to deposition of water After the pituitary injections were stopped following the induction of permanent diabetes, the ketonuria decreased but the glycosuria kept on.

In the pituitary diabetic dogs, a larger amount of in sulin was needed to control the glycosuria than in pancrea tectomized diabetic dogs. Allen in 1924 noted that more insulin was necessary in pancreatectomized dogs than in cases of human diabetes. Best took the pancreas out of one of Dr Young's pituitary diabetic dogs and found a slight increase in insulin requirement. Dr Young, in doing the same experiment, found a decrease in the dia betes. Although the food had been well controlled, this was a single observation, and cannot be taken for more than it is worth He raised the question as to whether this suggested that acinar tissue has a pro-insulin or anti diabetic action.

Pituitary diabetic dogs can survive for a long time, perhaps indefinitely without treatment if they are given enough food. Pancreatectomized dogs, on the other hand, cannot be kept alive in this manner they require in sulin. When pituitary diabetic dogs were given small amounts of insulin no change in the dextrose-nitrogen ratio was noted but a slight decrease in the ketonuria occurred. In pancreatectomized dogs the ratio dropped to 1.2, the ketonuria again being decreased. This indi cated that pituitary diabetic dogs respond less readily to insulin. In a comparison between the glycosuria ketonuria and weight curves of pituitary and pancreatic dogs, Dr Young showed that on gradually decreasing in sulin dosage, the curves of the latter dropped to approach those of the former but that when the dose was lowered to nothing the pancreatic dogs died whereas the pituitary dogs continued to live without insulin.

On the whole in depancreatized dogs, an extra 50 gm. of glucose is fully eliminated, as shown by no appreciable change in the dextrose nitrogen rano, a fat diet increases glucose retention, and there is no rise in the respiratory quotient following ingestion of glucose. Fasting results in a decreased dextrose nitrogen ratio within forty-eight hours. In the pituitary-induced diabetic dogs a high carbohydrate diet results in a decrease of glycosuria and ketonuria and the addition of casein does not affect the ketonuria but does cause a reappearance of the glycosuria. Raw meat, however increases ketonuria. This suggests that the production of ketones from fatty acids cannot occur in the absence of a substance derived from raw meat—possibly a protein. In spite of this, the concept that ketones are formed from fatty acids and not from proteins is too well founded to be given up In summary the diabetes in pituitary-injected dogs differs in many re spects from that in depancreatized dogs.

The pathologist reported no changes in the thyroid pituitary and adrenal glands of pituitary diabetic dogs, but the islets of Langerhans showed varying degrees of changes, up to complete hyalinization The earliest changes were hydropic degeneration of the beta cells. (This is sometimes seen in specimens from human dia bene panents and in the remnant of pancreas in Allen's parually depancreatized dogs.) However mitoses and hydropic changes were often found to co-exist in the same islet.

Certain workers have reported an increase in the size and number of islets following pituitary injections, but their observations were based on histological appearance, a method open to criticism. Richardson and Young, by a more accurate method, confirmed this so far as total

amount of tissue was concerned, but could get no evidence for an increase in activity of the tissue. Hypophysectomy also increases the amount of islet tissue in the pancreas

The expected increase in insulin production was found in rats but not in dogs Dr Young demonstrated an increase of insulin up to 30 or 50 per cent following injections of pituitary substance, but rats do not get the diabetes that is obtainable in dogs The possibility presented itself that the resistance of dogs to the diabetogenic action of pituitary substance may be due to the increase in islet tissue and insulin production, which is insufficient, however, to prevent the symptoms of diabetes In rats this compensatory reaction is so powerful and rapid that diabetes cannot be produced

All the pathological sections showed abnormal islets of one sort or another, which were evidence of physiological strain rather than of disease, but there were no signs of permanent changes in the pituitary gland, at least after permanent diabetes had developed Likewise, by Himsworth curves, Dr Young was unable to show that there was abnormal sensitivity to insulin, and there was no evidence that a substance existed in the serum which inhibited the action of insulin

Dr Young's conclusions were that, although there is no evidence that permanent diabetes is due to continued hyperactivity of the pituitary gland, it is not wholly due to the islet changes In diabetic patients, the lack of signs of pituitary hyperactivity is not proof that the pituitary is not the cause or may have been the initiating factor of the diabetes

NOTICES

ANNOUNCEMENT

JOHN J SLATTERY, M D, announces the opening of an office at 95 Mt. Auburn Street, Watertown Telephone MIDdlesex 6161

REMOVAL

GABRIEL J RUBIN, M D., announces the removal of his office from 483 Beacon Street to 520 Beacon Street, Boston

ASSOCIATION OF MILITARY SURGEONS

The regular meeting of the Colonel Williams Chapter of the Association of Military Surgeons of the United States will be held on Tuesday, July 18, at 8 00 p m. at the headquarters of the 101st Medical Regiment, South Armory, Boston Election of officers The speaker will be announced Refreshments.

SOCIETY MEETINGS AND CONFERENCES

CALENDAR OF BOSTON DISTRICT FOR THE WEEK BEGINNING MONDAY, JULY 17

TUESDAY JULY 18

10 a m 12 30 p m Boston Dispensary tumor clinic

8 p m Association of Military Surgeons Headquarters of the 101st Medical Regiment South Armory Boston

FRIDAY JULY 21

*10 a m 12 30 p m Boston Dispensary tumor clinic

SATURDAY JULY 22

10 a m 12 m Staff rounds of the Peter Bent Brigham Hospital. Conducted by Dr Marshall N Fulton

Open to the medical profession

JULY 18 — Association of Military Surgeons Notice above

AUGUST 30 SEPTEMBER 2 — Seminar in Physical Therapy Page 857, issue of May 18

SEPTEMBER — Boston Psychoanalytic Institute. Page 450 issue of September 22 1938

SEPTEMBER 4-6 — Institute for the Consideration of the Blood and Blood Forming Organs Page 941 issue of June 1

SEPTEMBER 5 8 — American Congress of Physical Therapy Page 857 issue of May 18

SEPTEMBER 11 15 — American Congress on Obstetrics and Gynecology Page 938 issue of December 8

SEPTEMBER 14 16 — Biological Photographic Association Page 941 issue of June 1

SEPTEMBER 15 28 — Pan Pacific Surgical Association. Page 863 issue of November 24

OCTOBER 23 NOVEMBER 3 — New York Academy of Medicine Page 977 issue of June 8

FALL 1939 — Temperature Symposium Page 218 issue of February 2.

DECEMBER 2 — American Board of Obstetrics and Gynecology Page 1019 issue of June 15

MAY 14 1940 — Pharmacopoeial Convention Page 894 issue of May 25

JUNE 7 8 and 9 1940 — American Board of Obstetrics and Gynecology Page 1019 issue of June 15

BOOKS RECEIVED FOR REVIEW

Treatment in General Medicine Edited by Hobart A Reimann 3 vol 2834 pp Desk index 107 pp Philadelphia F A Davis Co, 1939 $30 00

Public Health Law James A. Tobey Second edition 414 pp New York The Commonwealth Fund, 1939 $3 50

A Textbook of Obstetrics With special reference to nursing care Charles B Reed and Bess I Cooley 477 pp St. Louis The C V Mosby Co, 1939 $3 00

The Canned Food Reference Manual 242 pp New York American Can Co, 1939

Varicose Veins Alton Ochsner and Howard Mahorner 147 pp St. Louis The C V Mosby Co, 1939 $3 00

The Organism A holistic approach to biology derived from pathological data in man Kurt Goldstein 533 pp New York American Book Co, 1939 $3 20

The Evolution and Organization of the University Clinic Simon Flexner 41 pp New York Oxford University Press, 1939 $1 25

Les Occlusions Artérielles Aigues des Membres Formes cliniques, indications physiopathologiques et therapeutiques H Haimovici 124 pp Paris Masson et Cie 1939 26 Fr fr

Eléménts de Physiologie Clinique de l'Appareil Circulatoire J Castaigne and P Dodel. 146 pp Paris Masson et Cie, 1939 27 Fr fr

BOOK REVIEWS

The Language of the Dream Emil A Gutheil 286 pp New York The Macmillan Co, 1939 $3.50

This volume is written by a physician who, for a number of years, was a co-worker and also, it seems from the content of the book, a follower of Wilhelm Stekel Up to the time of his breach with Freud, Stekel was one of Freud's most eminent pupils, and he had an unrivaled gift and intuition for dream interpretation. The references in the volume to Freud, however, exceed those to Adler, Jung, Stekel and Silberer

It must be emphasized that while dream interpretation is important in analytic technic, the trend of modern analysis is to analyze the ego and its aberrations and not as in the past, to concentrate solely on unconscious mental processes Therefore, from this volume, the uninformed reader may gain the erroneous impression that dream interpretation is the chief means of analysis

The interpretation of a dream does not depend on an arbitrary translation of symbols but on the dreamer's free associations of the dream content and the physician's knowledge of the psychologic structure of the case under

nalysis. The tendency of the author is to omit all the ree associations in arriving at a knowledge of the symolic meaning of the dream but it is only fair to state hat he says he does this, as otherwise the volume would e too bulky

In theory, he believes in interpretation without much se of free association but in the handling of difficult ases he is forced back on free association for actual proof f the meaning of the dream. The author realizes that nerely being told the intellectual content of the dream ounts for very little free associations are necessary to ncover the buried material of the unconscious, the soalled latent content of the dream. The author claims hat dream interpretation is important because it shortens he duration of the analysis, but this is a viewpoint with vhich most psychoanalysts would disagree.

The volume gives an analysis of three hundred and ighty-six dreams and has a detailed bibliography and a lossary of psychoanalytic terms. An interesting feature f the book is the pictorial illustration of the dreams vhich is rare in other works on dream interpretation.

Surgical Anatomy C. Latimer Callander Second edition. 858 pp. Philadelphia and London W B Saunders Co., 1939 $10.00.

Medical students and surgeons will feel indebted to he author for revising his excellent textbook. The first dition, printed in 1933 contained 1115 pages the presnt edition numbers 858 pages. This reduction in the size f the book has entailed no sacrifice in quality On the ontrary one hundred new figures have been added—ome original others taken from recent surgical journals. These illustrations further serve to bring correct anatomic detail not only into the paths of surgical approach but lso into the depiction of the steps of most of the commoner standardized operations. The more recent advances in the surgical anatomy of many topographic regions have been recorded, such, for example, as deal with umbar sympathetic ganglionectomy resection of the sacral plexus, and operations for cervical rib, the scalenus anticus yndrôme and spondylolisthesis.

It is regrettable that the author omitted the entire former chapter on the development of the gastrointestinal tract and the peritoneum In view of the fact that space s given to brief embryological consideration of such structures as the diaphragm the thyroid gland the nose nd the mouth, it seems that several paragraphs on the mbryology of the gastrointestinal tract should be contained in the text.

Everyday Surgery Lambert Rogers and A. L. d Abreu. 280 pp. Baltimore William Wood & Co., 1938 $4 75

This volume outlines with considerable discrimination and balance almost the entire field of general surgery major and minor together with much of urology and orthopedics. The book is not meant to be a text, but rather a necessarily somewhat dogmatic description of the accepted and standard practices of the Department of Surgery of the University of Wales. The authors have obviously resisted the temptation to become expansive and have spent the greater part of their effort on those diseases or conditions which occur most frequently in their practice, rather than those which might be most interesting. The illustrations are few in number but pointed and apt in their application to the text.

On a number of minor points most American surgeons would disagree with the authors, for example, that the external inguinal ring should not ordinarily be opened in hemorrhaphy and that fresh traumatic wounds should be cleansed with a strong antiseptic solution. Also the treatment of fracture of the femoral neck as recommended is that of Whitman, although the very popular internal fixation of Smith-Petersen is mentioned The treatment of empyema is well described, but it is hard to say how open pneumothorax can be avoided if the Tudor Edwards drainage tube is used as described. However, the book is more open to criticism on the score of omissions than on these details. For example, there is no mention of the problem of back pain which occurs so frequently in American practice. Also there are no references to the literature. If the authors had selected a few references for each chapter with the care and discrimination with which they have written the chapter itself the book would be far more valuable than it is at present for the senior student or general practitioner It should be particularly useful to those preparing for examination in surgery

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Practical Bacteriology Haematology and Animal Parasitology E. R. Stitt, Paul W Clough and Mildred C. Clough. Ninth edition 961 pp Philadelphia P Blakiston's Son & Co., Inc., 1938. $7 00

The ninth edition of this book fully maintains the high standards established since its first publication. As a matter of fact, "the Stitt"—as it is commonly spoken of in laboratories—has so thoroughly filled a need for workers in medical diagnosis that one must be grateful to those who have expended the labor to keep it up to date. It is a unique volume, in that it covers, from a practical point of view many subjects that cannot be found grouped together in such a readily available manner in any other book on the subject. The ordinary textbooks of bacteriology hematology and parasitology limit themselves in scope and devote many pages to theoretical considerations which important enough for thorough surveys of individual subjects, have relatively less value to the laboratory diagnostician. In this book theoretical discussions are precise, but brief and the emphasis is largely on methods and the interpretation of results. If one were to choose a single manual for general use in this kind of work no other book—at any rate in English—could be found to equal it. Its scope is extraordinary in that in addition to the subjects referred to in the title, there are excellent sections on diseases of the endocrine glands, deficiency diseases and chemical blood analysis. There are useful and sufficiently extensive sections on insect vectors, on poisonous snakes and on other animal poisons. The material has been brought thoroughly up to date, and the authors have availed themselves of the expert advice of such men as Freeman Frances, Dyer and Siler

If there are any criticisms to be made, it would be in regard to occasional slight oversights in including a few older methods that were published in earlier editions but have since been superseded by better ones. But such oversights are few and taken as a whole, the book fulfils the expectations aroused by perusal of its earlier editions.

Perhaps the best summary of the value of the book that one can give is that it is not the type of volume which will be kept on library shelves but, once introduced into a laboratory or a doctor's office it will lie most of the time at the worker's elbow For the practicing physician or public health worker engaged in diagnostic work, this book cannot be too highly recommended and the present edition, we predict, will greatly extend its already wide distribution.

Landmarks in Medicine Laity lectures of the New York Academy of Medicine. 347 pp New York and London D Appleton Century Co, 1939 $2 00

In 1886 the New York Academy of Medicine established the custom of inviting the public to its annual discourse. This organization had come to believe that there was an obligation of the medical profession to "interpret the progress of medical knowledge" for the information of the laity A few years later, with the appreciation of the increasing interest in medical matters by the public, the Academy extended this service to maintain an annual series of lectures

In this volume will be found the third series of these lectures In the first, Dr Francis R. Packard records the important facts of the history of surgery from the time of Hippocrates through succeeding centuries to 1843, when the charter of the Royal College of Surgeons of England was obtained from Queen Victoria In the second, Dr Alfred E Cohn discusses the meaning of medical research The third, given by Dr Harrison S Maitland, presents an elaborate dissertation on the evolution and future of detective and mystery fiction, with descriptions of the methods adopted by murderers and suicides, followed by a treatise on forensic medicine in the United States The fourth, by Dr James J Walsh, is devoted to medicine in the middle ages, including some features of medical education and laws pertaining to practice In the fifth, Dr Raymond Pearl presents facts relating to longevity, with charts and figures depicting the favorable and adverse factors relating to advanced age. The sixth, by Dr Reginald Burbank, concerns the relation of medicine and civilization, and the seventh covers the early history of x rays and the part played by Dr Lewis Gregory Cole in their application to medicine.

All the chapters in this volume demonstrate the remarkable ability of the authors to assemble facts and bring to bear associated matters of interest in elaborating the main themes, thus collecting a series of educational and interesting stories which appeal to intelligent readers Fortunately organized medicine is meeting its obligation to the public and in many ways is maintaining a campaign of instruction which will offset the opposition to medical progress by certain groups Lectures such as those presented in this book have an important position in this campaign

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The Principles and Practice of Perimetry Luther C Peter Fourth edition 331 pp Philadelphia Lea & Febiger, 1938 $4.50

The publication of the fourth edition of Dr Peter's book is testimony to its popularity In spite of the criticisms offered in this review, the reviewer is happy to commend the author on the excellent organization of the subject matter and the attractive style of presentation

The value of the first section, dealing with anatomy and physiology, would be enhanced by more illustrations, particularly by diagrams indicating the cortical representation of the macula, the visuosensory and visuopsychic connections of the area striata and the positional arrangement of the retinal fibers in the optic nerve. Such diagrams would enable the student to correlate clearly and accurately the course of the retinal fibers to the cerebral cortex

The section dealing with technic would profit by a lucid discussion of fixation and means of obtaining it in the presence of lowered visual acuity Some of the desired information is present in the appendix but would be better placed in the text itself. Since fixation is certainly the most important single factor in perimetry and scotometry, it is deserving of detailed discussion in all its phases For use with the Bjerrum type of tangent screen, no method of obtaining fixation in the presence of a central scotoma is indicated Much space is devoted to the discussion of color fields and qualitative perimetry at the expense of the quantitative method, especially as it relates to the tangent screen Color fields certainly have their place in perimetry, but in view of the lack of standardization of colors and the wide variation of normal color fields, the reviewer believes that quantitative methods offer greater satisfaction for routine examination Students will be confused in their efforts to correlate Figure 40 and Figure 41 in the section dealing with the old and new methods of charting fields, because the charts in the latter are mislabeled right for left, and vice versa Many of the charts throughout the book fail to state the visual acuity or the size of the visual angle employed

In the section on special pathology, the author speaks of characteristic field changes in chronic nephritis and diabetes, conditions wherein experienced perimetrists disagree about such changes It would add to the value of this section if mention were made of the changes in the field of vision due to vitamin A deficiency, and of field defects from chemical poisons, especially tryparsamide.

The importance of preoperative fields in determining the extent of surgery in cases of detached retina should be emphasized

Dr Peter's book has undoubtedly advanced the subject of perimetry and should serve to stimulate recognition of its importance, especially in the fields of ophthalmology and neurology

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Doctors, I Salute! Emilie Conklin 92 pp Winona Lake Indiana Light and Life Press, 1938 $1 50

Mrs Conklin's contacts with the medical profession seem to have been of the pleasantest, and many of her verses are in praise of the sons of Aesculapius Verses they are, not poetry, unless one regards the latter as merely composition in meter For her mount is no winged Pegasus, but a terrestrial steed which on occasion is observed to stumble. There have been those — heaven know why — who have styled the lady "an American Kipling" It would be more reasonable to liken her to Edgar A Guest or James Whitcomb Riley — in their least spontaneous moments It seems a pity that one genuinely sincere and honest should select a medium of expression in which her efforts appear as forced and artificial as they do here.

Out of the Running G Gertrude Hoopes 158 pp Springfield, Illinois, and Baltimore Charles C Thomas 1939 $2 00

This is the autobiography of a patient, now aged sixty, who has suffered since childhood from paralysis of both legs and arms and inability to speak. The injury appears to have been either congenital or due to birth trauma Mentally, she is normal, and this account of her life indicates that she has made unusually good use of her talents Her life, necessarily much limited, is broadened by her contact with people, and much relief for her condition has been obtained by her devotion to the Catholic Church This brief account of her life is of considerable medical interest indicating what may be accomplished under the most severe handicap by a patient determined to adjust her life to her environment.

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MASSACHUSETTS MEDICAL SOCIETY

THE MASSACHUSETTS MEDICAL SOCIETY AND SOCIALIZED MEDICINE*

ELLIOTT P JOSLIN, M.D †

BOSTON

EACH member of the Massachusetts Medical Society is a unit in medicine and each doctor has been a unit in social medicine from the days of Hippocrates Intertwined with his zeal to heal the body he has had the desire for removing human error, clearing human confusion and diminishing human misery" But today individuals are apt to count for too little and the public looks to groups or to the state itself for guidance So in medicine it either pays little attention to the single doctor or overrates him while it stares at the armies of organized medicine in the United States, the medical societies and the medical schools I for one, believe in the unit, believe in the individual love his initiative admire his competitive spirit and above all trust his conscience, though I am not unmindful of the demand of the public that we as a profession exemplify in our societies and in our medical schools by measures and acts our highest aspirations, and I hope we shall not be judged by our ofttimes pitiful performances There is no gainsaying the necessity for our societies and our schools to be as jealous of their reputations as we as individuals are of our own

This need for the medical society and the medical school to express convictions and give advice is all the stronger because a generation ago the influence of the doctor as a unit in social medicine was far greater than it is today This was largely because at that time the number of educated men in the community was so much smaller and the standing of the lawyer, the minister and the doctor carried more weight. Their opinions were sought more, and each one dealt more intimately with the social problems of his circle than did representatives of other groups. It is natural that with the expansion of education among all classes, the influence of the doctor in molding society and determining its action has decreased Former President Lowell has often deplored this fact and urged doctors to take a far more active interest in civic affairs, and in this we will all agree, but besides this we must see to it that our groups of doctors in their medical gatherings do so too, and by their enlightened action demonstrate their altruism and their desire for the common good If we doctors do not have as much influence among our fellows as a century ago, it is to some degree our own fault because we have become too much engrossed in our own individual medical lives It is not strange that our medical societies and schools have been far too much concerned with purely technical medical problems, because these have become so manifold with the rapid development of medicine.

Each member of the Massachusetts Medical Society who like Dr Homer Gage or Dr George Sears, takes up hard, trying and often thankless tasks for his city not only deserves our constant admiration, but serves as a stimulus for the rest of us in lesser ways and in smaller environments to exert an influence for good These have made the public aware how earnest and self-sacrificing doctors can be, just as the work of the Massachusetts Department of Public Health is a constant reminder of the purpose of our state to safeguard the health of its citizens. More duties are constantly being placed upon the department so that perhaps at this moment it is more active in promoting sound medicine than ever before.

Thus far you perceive that I have been talking about social medicine, and in so doing I stand on solid ground I much prefer this term, "social," to that of socialized medicine" which I think few of us want and most of us hope through the ad

*The Annual Discourse delivered before the annual meeting of the Massachusetts Medical Society Worcester June 8 1939

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vancement of social medicine can be deferred and time thereby allowed for a revision of methods proposed, which if promulgated today might engulf us

It is difficult to estimate the individual doctor's efforts in social medicine, and I doubt the desirability of doing so Although your committee finds that a single doctor probably treats nearly a hundred patients a year without any financial return, and if working in a hospital, many hundreds, consuming six to ten hours a week in the process, it is a question in my mind if he may not do more and actually better social medicine when he treats his other patients either at reduced cost, enabling them to save their self-respect, or even the remainder at full rates You cannot measure a doctor's social value by what he does for the poor alone He may exercise a far higher type of social medicine when he raises the morale of a capable but discouraged manufacturer or salvages both the soul and body of a millionaire The survey of the committee on the number needing medical care appears to show that those unable to secure it in this state is really very small indeed

Health Councils

Certain units of our medical society several years ago took a strong stand in favoring the creation of health councils In these were represented all those agencies which were concerned in the health, and often charitable, activities of a given community As an example I may cite the Massachusetts Central Health Council Obviously any association which brings together all societies working in any way toward health is an advantage, because it promotes efficiency and reduces cost Already in Springfield such a council has been established under the name of the Health Promotion Council of Springfield, and still another on Cape Cod under the designation of the Cape Cod Council of Health and Social Agencies The Massachusetts Central Health Council represents eighteen different organizations, and some of these are made up of many constituent parts This Massachusetts Central Health Council has cooperated closely with the Massachusetts Medical Society in its efforts to raise medical standards and guide legislation along progressive and sensible lines

Our fellow member, Dr Michael A Tighe, in a radio broadcast on December 14, 1938, set forth very strongly the benefits which accrue from the organization of a health council He brought out not only the desirability but the necessity for such councils, and touched upon many of the problems in which our members should take a more active interest This endeavor to promote the improvement of sanitation and health, housing, nursing and medical care of the poor of a town, a city or a county requires more than the work of an individual, it requires the laborious, united and unremitting endeavor of groups of individuals and societies Doctors, by actively taking part in all such agencies seeking the betterment of health, may demonstrate their availability and willingness to co-operate Their experience and wisdom, so necessary in the plain everyday details of relief work, whether medical or otherwise, will become known and appreciated if they enter wholeheartedly into the work of all charitable societies Only by joining in such work can one learn and be able to point out how present facilities can be more wisely used Incidentally, in this manner the doctor will learn on a large scale, what his clientele has taught him on a small scale, the social as well as the medical wants of the indigent, and so he can drive home the idea that just as food, clothing and housing are contributed to the needy, medical aid should be provided as well, and not wholly as a matter of charity by the doctor By utilizing these forums of the health councils, established in communities throughout the State, members of our society can emphasize that there is not so much a lack of medical facilities as there is the need, as Dr Tighe says, for their better distribution

It is unfortunate that more of these health councils have not been organized Only those who have participated in their meetings can fully understand the good which they do Unquestionably they are composed of our friends, but sometimes even our friends have not understood completely the desires of doctors, either individually or collectively, to improve medicine, simply because we doctors may object to some special measure which, although perhaps good in itself, we believe to be impractical for execution at the moment

Associated Hospital Service Corporation

The avidity with which the public has taken advantage of the provisions of the hospital-service corporations is a good index of the kind of socialized medicine which the people want This type of organization is still in its infancy but in the United States during the last few years the membership has grown so rapidly that 3,500,000 individuals were enrolled on April 1, 1939 The Massachusetts unit is the fourth in size in the country and by the first of May this year the enrollment totaled 181,881 individuals When more than 3,000,000 of the citizens in this country take up a project of this kind so quickly, it is self-evident that it has filled a need In consequence we may anticipate

that it, or a modification of it, will be adopted by many more millions. That the organization has been developed as a private agency instead of a public undertaking and is not political is all the more in its favor That there is interest enough in the plan to have aroused a desire for hospital insurance at ward rates as well as for semi-private accommodations should encourage everyone because this is evidence that an increasing number of our population wish to be independent and self supporting Nothing has heartened me more in the work at camps for diabetic children than the wish of the parents to bear a portion of the costs People do not like to be on the dole or on anything which suggests it I am sure all of us are eager for the Associated Hospital Service Corporation to extend itself

By no means can the medical profession claim all the credit for the good this organization is doing, but fortunately the medical profession has shared in its activities Not the least of the many benefits from this new trend in medicine is the opportunity which this organization has presented to study on a relatively small scale what is likely to happen if similar facilities on a large scale should be offered the public At first it appeared as if the corporation's assets were accumulating too rapidly, and then the trustees extended the benefits of membership It is perhaps fortunate this spring that the reverse became true, and I know of nothing which will lead to more careful and sober thought about the extension of benefits conferred by medical service organizations than the fact that it has been necessary to defer hospital payments 25 per cent in New York City and 20 per cent here in Massachusetts So great had been the surplus early in the year that an extension of services was arranged so that payments originally covering actual hospital cost were increased to include costs for x-ray as well. I am sorry that the hospitals concerned were not consulted before this decision was reached When we remember that the trustees, who are in charge of the organization here and of similar organizations elsewhere, are *citizens* of the highest type and wide experience, and yet that the possibilities of deficit were not adequately foreseen, it proves to each one of us the necessity for careful deliberation before extending the scope of any plans for the simplification of medical care The Associated Hospital Service Corporation has the good wishes of us all. We know that its directors are exercising their best judgment If the plan runs into pitfalls, as it did this spring when colds became more prevalent and people sought to get back their money's worth by a good rest in a hospital, that is all the more to the good, because it teaches us how easily funds are exhausted. When such a scheme temporarily fails, moreover, we realize that any deficit must be borne by the doctors and nurses and hospital employees, rather than by those who execute the undertaking

Prepayment of Medical Care

It is only a step from the socialized—and this time not social—Associated Hospital Service Corporation to an organization for the prepayment of physicians services How quickly we move! Who would have thought of that a decade ago? And how skeptically such a plan would have been regarded! Yet after deliberations occupying less than a year, the Massachusetts Medical Society stands committed to it. It has gone still farther and voted not only to take the initiative in it as soon as an enabling act is passed by the legislature, but also to organize a corporation to carry it into effect Such speed is spectacular How valuable it is for critical study that there are so many organizations—I understand there are 450—throughout the United States which have in one way or another devised plans for the prepayment of doctors fees It is unfortunate that people generally are not better acquainted with these experimental efforts Whether one or more organizations independently or in conjunction with the Massachusetts Medical Society will form corporations to take part in such prepayment plans is not essential Possibly it might be better to have several undertake such activities, because each could profit from the mistakes or successes of the others Furthermore, the members of each group might have had earlier experience in such undertakings based on contacts of a social religious or professional nature. Again, just as in the case of the hospital service plan one of the chief advantages of multiple prepayment medical service plans may be that they will furnish information which later might be of service to governmental units large or small when dealing with the care of the sick poor The more errors we can discover on a small scale, the less catastrophes there will be on a large one.

The Wagner Act

In any discussion of socialized medicine before the Massachusetts Medical Society the Wagner Act must be mentioned Few if any of us would approve of it in its entirety, and I think I voice the opinion of most of you when I say that the Society would like it to gestate in committee a long time I suspect that you and I are opposed to it as it stands, first, because we as a society and as individuals are opposed to going into debt and therefore cannot approve of the expenditure

of nearly $100,000,000 the first year and approaching $1,000,000,000 a few years hence Second, a nation that is in debt, like the individual, is subservient to someone else We do not wish to be subservient to anyone, even to our government We wish our independence Third, the health of the people in the United States is so much better than that in other regions of the world, except in certain small nations, that no radical revision of health measures should be attempted which disregards and discards those which have already yielded so many benefits

It may be claimed that we have more wealth and more natural resources than other countries, and that these facts and not our present medical customs are responsible for the health of our people, but that is our good fortune It is surely true that our health is improving by leaps and bounds under our present conditions I have studied one disease thoroughly and have seen it for myself in various countries, and I know, so far as that disease is concerned, that the United States can challenge the world I am not aware of any area anywhere where the average of medical care of diabetic patients is better than in Massachusetts As proof I can say that the new patients consulting me this year have already had the disease longer than their total life span twenty-five years ago The illnesses which we encounter in those classes of the community and that stratum of society where the health is poorest are by no means wholly due to poor medical care or to poor doctors, but rather to unemployment, for which the doctors are not responsible When business is good in this country, there is comparatively little complaint about poor health or inadequate medical care.

Fourth, even if one grants that socialized medicine, as we understand the term, is desirable, to extend it at one stroke to 40,000,000 people in the United States is dangerous, because we have not the medical personnel sufficiently trained to do the actual work, much less to supervise it This danger is best foreseen by those who are most competent to judge, namely those who are actively concerned on the firing line in health work The number of doctors in the United States Public Health Service was 2212 on April 8, 1939 There were 6230 other employees and 4823 doctors connected with state and county health departments holding appointments in the United States Public Health Service with nominal compensation at the rate of $1 per annum One is appalled at the thought of the appointment of doctors by the Government sufficient to raise the number to 40,000 because at present competent doctors for the task have not been trained Expansion of the work for the care of the sick must proceed slowly, especially if it is to be along lines which are entirely different from those which have been utilized in the immediate past

Fifth, politics already play a part in health matters Although recruits for important posts are available from the United States Public Health Service, they are passed over I fear to turn 40,000 appointments into politics until the community as a whole has so emphatically expressed itself that politicians will not dare to tamper with the health of the people If the army of 40,000 appointees came under the central authority at Washington or even at state capitals, think of the control which might be exercised through these political appointees on the 40,000,000 people for whom they would care! The political interference with the minor policies of the Boston City Hospital is an illustration of the petty politics which can make it so disagreeable to assume public office as to deter many able men from accepting positions of responsibility On the whole, though, I am under the impression that the public sees through this campaign of innuendo and condemns it more today than it would have done a few years ago

If we could expand the United States Public Health Service gradually, I venture to say that much of the opposition to a rearrangement of the care of the indigent sick would melt away, because both doctors and the laity would have time to note the advantages and remedy the shortcomings of this metamorphosis of medicine

Sixth, we are not satisfied with the present setup for the WPA or Social Security agencies, and it is conceded that changes should be made in the original acts Why not attempt to perfect these huge departments of the Government before inaugurating a nation-wide health program soon to involve a billion dollars? Let us profit from failures in similar projects There is no harm in a little delay, because the health of the country will be improving in the meantime Here in Massachusetts beds for tuberculosis are beginning to be empty, and there is a diminishing cancer waiting list at our state hospitals

Seventh, the allocation of medical funds causes apprehension We fear that to certain states with relatively good health conditions — and these are particularly those states which furnish high revenues to the Government — where four dollars more or less are now appropriated per capita for health the allotment might be reduced to forty cents or thereabouts, and to those states expending forty cents per capita, four dollars might be assigned Perhaps we should be so altruistic as to forget this possibility Nevertheless we do not want to give a prize of four dollars a head to that state which

shows it takes the poorest care of the health of its citizens

Eighth, to institute an enormous hospital build ing program is disturbing and its advisability is questionable. Hospitals of a voluotary nature and also those of a public nature are increasing with astounding rapidity It is reported that in 1938 the equivalent of a 101-bed hospital was erected each day in the year throughout the couotry Yet at times nearly 30 per cent of the beds in vol untary hospitals are vacant I am sure that all of us feel that available hospitals should be utilized before new hospitals are built Arizona may need 1000 new beds for tuberculosis, but would it not be cheaper to utilize the 500 vacant beds for tuber culosis in Colorado for this purpose than to build sanatoriums for a disease which is diminishing at the rate of 5 to 10 per cent a year throughout the whole couotry? In Arizona the mortality rate from tuberculosis in 1925–1927 was 366 0 per 100,000, but it dropped 27.3 per cent or to 266.2 in 1935–1937 In 1938 the rate (provisional) from tuberculosis was 178.8 per 100,000

Everyone agrees that medicine can improve now and forever, but let us look before we leap and not by mistakes undo the good that has been done. I hope our Washington friends will not hurry us doctors If they will give us a little time, we shall save their coostituents money and produce better medicioe, and most of it at our own expense.

Education Postgraduate and Undergraduate in Massachusetts

The education of the doctor represents the highest type of socialized medicine which the Massachusetts Medical Society can foster Upon the Society rests a distinct responsibility to this regard, because of the 7528 doctors in Massachu setts there are 5109 who beloog to our organiza tion In other words, our members are directly responsible for the health of more than two thirds of the people in the State, and it is up to us to see not only that we take eare of these people well, but that we throw our influence toward good care for the remaining third of the population If it is the duty of one of our members to take an active interest in the medical affairs of the people in his immediate environment, it is equally im portant for our society representing all its mem bers, to take a strong stand for the improvement of conditions in the State as a whole Educatioo is a business in Massachusetts. Those outside the State realize that education is one of our chief undertakings, yet when it comes to education in medicine there are very few states in the Union which recogoize those licensed by our board as fitted to practice within their borders All will admit that such a condition is intolerable. Little is said about it, hut I think the time has come to air the question openly

Postgraduate Education

First of all I sball discuss the postgraduate edu catioo of the physician This amounts to far more than the laity, the medical schools or we, as doc tors, have begun to realize. A few days ago in St Louis I learned that of eight questions pro-pounded in one examination to a candidate for qualification as an internist, there was but one which could be answered by what he had learned during his four years io a Class A medical school One of the chief functions of a medical school to-day, therefore, must be to warn its students that their educatioo has just begun, and to show them how they can most easily and advantageously con tinue it

We can be justifiably proud of the advances which have been made in the last five years, aod indeed this very year, in Massachusetts. The New England Postgraduate Assembly held in Cam bridge last fall attests the eagerness of our mem bers for knowledge As a Harvard Medical School graduate I am proud that Harvard University gave us Sanders Theater for the purpose. This year the two days of instructioo should be even better and I know that your committee is gathering ideas from neighboring states regarding the pos-sibility of expanding this teaching into institutes along specialized lines continuing for some months of the year

Look at the excellence of the postgraduate courses given this winter and spring in eight dis-tricts of the Massachusetts Medical Society close to the offices of the doctors participating The sub-jects were anemia Bright s disease and hyper tension heart disease gonorrhea, syphilis ob-stetrics and pediatrics. These courses and the attendance at them refute aoy idea that the doc tors in Massachusetts after their graduation are backward

Team play characterized the organization of these extension courses. The Massachusetts Med ical Society in co-operation with the Massachu setts Department of Public Health the United States Public Health Service and the Federal Children s Bureau, united in effort This repre sents socialized medicine at its best. But here I wish to state what I have been told authorita tively, that the above program was made pos-sible largely through the help of the Massachu setts Department of Public Health and that it

was furthered wholeheartedly and actively by the present health commissioner, Dr Jakmauh, and if we doctors want still more postgraduate instruction, I am confident we shall find the commissioner anxious not only to assist in the program but to secure the funds

But do you realize that this official postgraduate instruction is not half the story of postgraduate teaching in this state? There is much of what would be called in academic circles extracurricular teaching Hospital units are giving not only their own courses to the doctors on their staffs and neighboring doctors, all of whom are welcome, but also courses which are all the more valuable because they are open to the laity, and thus the whole level of medical knowledge is being raised These are, in large part, outgrowths of the Sunday lectures to the laity at the Harvard Medical School and Dr Henry Christian's clinics to doctors at the Peter Bent Brigham Hospital It will not take long for the people themselves to learn how important it is to have up-to-the-minute physicians and surgeons Students, Dr Keen long ago pointed out, yelp at the heels of their teachers, but now the public is barking at the heels of us old practitioners

The reason why Massachusetts has the distinction of a falling cancer death rate, so I am informed by those who know most about it, is explained by the instruction given to doctors and by them to the laity through the aid of our society and organized under the direction of Dr Herbert Lombard, in charge of the Division of Adult Hygiene of the Massachusetts Department of Public Health Just as Dr Vaughn in Detroit has enlisted practicing doctors as his allies, so here you have been enlisted and in fact have become auxiliary health officers of Massachusetts Please note that you are doing this without appointment or recompense from Washington!

Undergraduate Instruction

Our methods of postgraduate medical instruction place us in an enviable position, but what can be said of undergraduate medical instruction in Massachusetts? As an introduction to this discussion let us first of all consider how many yearly replacements are necessary in order to maintain the present number of doctors in Massachusetts Granted we have doctors enough, how many additions are required to maintain the existing 7528 doctors? Let us assume that physicians begin the actual practice of their profession at the age of twenty-seven The life expectancy of men in the general population at this age is forty years and of physicians it is essentially the same This must be about right, because the average age at death of 3768 doctors in the United States for 1938 was 65 6 years and that would limit them to thirty-eight years of practice But this estimate is far too high, in my opinion, because so many give up medicine, retire or follow other careers long before this age is reached As a safer criterion for the determination of the number of yearly additions to the medical profession in Massachusetts I have adopted another method In the year 1909 the number of graduates joining the 134,402 doctors then in practice in the entire United States was 7246, a ratio of 1 19 At that rate the replacement would be complete in nineteen years In 1938 the replacement ratio was almost the same, 1 18—9527 to 169,628 Since these ratios are so constant we might assume on this basis that doctors practice on the average about twenty years, and therefore here in Massachusetts we should need 376 additions to our numbers every twelve months in order to maintain our quota Where shall we secure these 376 doctors?

This leads to the question, Where have Massachusetts doctors secured their medical education? In the *American Medical Directory* for 1938 are the names of 7528 physicians in Massachusetts Table 1 shows that they received their medical training in 193* schools Harvard supplied the most with 1816 names, closely followed by Tufts with 1704, next came Boston University with 598, followed by Middlesex with 232 The College of Physicians and Surgeons of Boston had 151 The University of Vermont had 189 graduates in the list and Yale had 73, or a scant 1 per cent of the total number

TABLE 1 *Sources of Education of Doctors Practicing in Massachusetts* †

MASSACHUSETTS	
Harvard University	1816
Tufts College	1704
Boston University	598
Middlesex University	232
College of Physicians and Surgeons	151
ARKANSAS	
University of Arkansas	1
CALIFORNIA	
Cooper Medical College	2
University of California	9
Stanford University	4
College of Medical Evangelists	11
COLORADO	
University of Colorado	12
CONNECTICUT	
Yale University	73
DISTRICT OF COLUMBIA	
George Washington University	21
Georgetown University	75
Howard University	6

*This does not include 542 graduates of institutions not listed as medical schools by the American Medical Association and 51 whom the information received does not show that the physician graduated from a medical school

†Existing approved schools are in italics

GEORGIA

University of Georgia	3
Emory University	13
Georgia College of Eclectic Medicine and Surgery	1

ILLINOIS

University of Chicago (Rush Medical College)	31
University of Chicago	4
Hahnemann Medical College and Hospital	7
Bennett College of Eclectic Medicine and Surgery	2
Northwestern University Woman's Medical School	3
Chicago Homeopathic Medical College	1
Northwestern University	25
Illinois Medical College	1
University of Illinois	11
American Medical Missionary College	2
Chicago College of Medicine and Surgery	16
Chicago Medical School	3
Loyola University	

INDIANA

Medical College of Indiana	1
Indiana Eclectic Medical College	1
Indiana University	17

IOWA

State University of Iowa	1
State University of Iowa College of Homeopathic Medicine	1
Drake University	4

KANSAS

University of Kansas	5

KENTUCKY

Kentucky School of Medicine	3
University of Louisville	8
Louisville Medical College	
Kentucky University	2

LOUISIANA

Tulane University of Louisiana	15

MAINE

Bowdoin College	68

MARYLAND

University of Maryland	39
College of Physicians and Surgeons of Baltimore	55
Baltimore Medical College	101
Baltimore University	18
Woman's Medical College of Baltimore	4
Johns Hopkins University	98
Atlantic Medical College	1
Maryland Medical College	15
Maryland College of Eclectic Medicine and Surgery	4

MICHIGAN

University of Michigan	64
University of Michigan Homeopathic Medical School	6
Wayne University	4

MINNESOTA

University of Minnesota	1
Minneapolis College of Physicians and Surgeons	1
University of Minnesota College of Homeopathic Medicine and Surgery	2

MISSOURI

Washington University	15
St. Louis College of Physicians and Surgeons	50
University Medical College of Kansas City	4
Epworth Medical College	1
Eclectic Medical University	1
Kansas City University of Physicians and Surgeons	4
St. Louis University	9
Kansas City College of Medicine and Surgery	1

NEBRASKA

University of Nebraska	20
Creighton University	2

NEW HAMPSHIRE

Dartmouth College	90

NEW YORK

Columbia University	105
Albany Medical College	30
New York University Medical College	34
University of Buffalo	7
Long Island College of Medicine	31
New York Medical College and Flower Hospital	18
Bellevue Hospital Medical College	28
New York Medical College and Hospital for Women	4
Eclectic Medical College of the City of New York	1
Woman's Medical College of the New York Infirmary for Women and Children	10
Syracuse University	7
Cornell University	32
New York University	31
Fordham University	2
University of Rochester	19

NORTH CAROLINA

Shaw University	4
Duke University	6

OHIO

Medical College of Ohio	1
Eclectic Medical College	3
Cleveland University of Medicine and Surgery	3
Miami Medical College	1
Western Reserve University	13
Pulte Medical College	1
Ohio State University	3
Cleveland-Pulte Medical College	3
University of Cincinnati	7
Columbus Medical College	1
Ohio State University College of Homeopathic Medicine	1

OKLAHOMA

University of Oklahoma	5

OREGON

University of Oregon	5

PENNSYLVANIA

University of Pennsylvania	79
Jefferson College	76
Women's Medical College of Pennsylvania	44
Hahnemann Medical College and Hospital of Philadelphia	32
Medico-Chirurgical College of Philadelphia	13
University of Pittsburgh	4
Temple University	11
Electropathic Institute	1

TENNESSEE

Vanderbilt University	12
University of Tennessee	8
Meharry Medical College	5
Chattanooga Medical College	2
University of the South Medical Department	5
University of West Tennessee	2

SOUTH CAROLINA

Medical College of the State of South Carolina	5

TEXAS

University of Texas	4
Baylor University	5

VERMONT

University of Vermont	189
Vermont Medical College	1

VIRGINIA

University of Virginia	21
Medical School of the Valley of Virginia	2
Medical College of Virginia	14
University College of Medicine	2

WISCONSIN

University of Wisconsin	3
Marquette University	2

CANADA

McGill University	98
University of Montreal	47
Laval University	13
University of Bishop College Faculty of Medicine	2
Laval University Medical Faculty	6
University of Toronto	16
Medical Faculty of Trinity University	2
Victoria University Medical Department	2
Queen's University	15
University of Western Ontario	4
Dalhousie University	17
University of Alberta	1
University of Manitoba	3

OTHER COUNTRIES

Africa	6
Australia	1
China	1
Czechoslovakia	3
England	6
Finland	1
France	9
Germany	35
Greece	5
Guatemala	1
Hungary	2
Italy	26
Norway	1
Poland	1
Portugal	6
Russia	10
Scotland	5
Switzerland	9
Syria	
Turkey	4

MISCELLANEOUS	
Graduates of institutions not listed as medical schools by the American Medical Association	542
Information received does not show graduation from a medical school	51
Total†	7527

†A discrepancy of one exists between this total and the 7528 of the *American Medical Directory*

If all the graduates in 1938 from Harvard, Tufts and Boston University (the three Class A medical schools in Massachusetts) settled in this state they would have furnished only 279 doctors, or 97 less than the quota of replacements It is doubtful, however, if the ratio of new doctors coming from all these schools, compared to the total required, is any greater than the ratio in the State already practicing, namely 55 per cent Reducing the total number of graduates, 279, to this percentage there would remain, therefore, only 153 doctors from Massachusetts Class A schools opening an office in the State, thereby making it necessary for us to obtain 223 doctors from other institutions Is it not important for the Massachusetts Medical Society, if we hold ourselves responsible for the medical welfare of all who live in the State, to consider the educational backgrounds of these 223 men? How many of them will come from unapproved medical schools I do not know, but I venture to say nearly a half Indeed it appears that Massachusetts welcomes doctors from unapproved schools far more than any other state in the Union Thus for the five years 1934 to 1939 the total number of graduates from unapproved schools registered in the United States was 866, and of these, 311, or over 35 per cent, secured their registry in Massachusetts, although they have not necessarily remained here to practice medicine, the Commonwealth has in a way become a dumping ground for these graduates

The educational qualifications of these men unfortunately are evidently even worse than the badge of an unapproved school would imply, if the results for all examinations held by the Massachusetts Board of Registration in Medicine are similar to that in March this year, when of the 193 taking the examination 112 were repeaters, and all these repeaters were from unapproved schools, in contrast to no repeaters from approved schools With socialized medicine creeping on us in one form or another, it behooves the citizens of Massachusetts and the Massachusetts Medical Society, the guardian of its health to see to it that we shall not receive and allow to practice here men with such obviously inadequate training, so inadequate in fact that they are practically excluded from participation in medical work in all but a few states

Some years ago while conducting a clinic for a group of students I showed as one of my patients a two-year-old child The story ran that at the age of one year and nine months, while at a summer resort, she became ill and her parents called in the only available doctor, who chanced to be a very young man Nevertheless he grasped the opportunity, studied the situation carefully and asked for a specimen of urine The child had diabetes The symptoms and signs of the illness had not been particularly outstanding, but the alertness and thoroughness of the doctor resulted in that early diagnosis which is as important in diabetes as in tuberculosis And now eight years after beginning to take insulin the child looks as healthy as her companions and perhaps even more so The moral of this story, which I pointed out to the students, was not that the doctor was young, alert or painstaking, but rather that he graduated from Middlesex, where despite the meagre instruction offered he had learned enough to make a diagnosis

I consider it appropriate, therefore, that I discuss from the point of view of socialized medicine the situation at the Middlesex University School of Medicine This school was founded in 1849 as the Worcester Medical Institution, later was forced to suspend, reopened in 1914 as the Middlesex College of Medicine and Surgery, subsequently becoming Middlesex College, and in 1937 was absorbed by Middlesex University The early records were lost in a fire, but from June, 1915, to date it has graduated 918 students For the years 1934 to 1938 inclusive its graduates stand in numbers next to those of Harvard, Tufts and Boston University (Table 2)

TABLE 2 *Total Graduates, 1934–1939, from the Medical Schools of Harvard University, Tufts College, Boston University, Middlesex University and Yale University*

INSTITUTION	1934	1935	1936	1937	1938
Harvard University	132	137	134	139	135
Tufts College	103	119	116	119	106
Boston University	53	56	64	54	45
Middlesex University	41	57	64	83	46
Yale University	40	47	47	48	38

Two hundred and thirty-two graduates of Middlesex were practicing in Massachusetts according to the *American Medical Directory* for 1938, and probably a considerably greater number, estimated at 640 * Only a part of these doctors passed the state examination at their first trial, and I suspect many required three or more trials Not a single one of these graduates was passed by the National Board of Medical Examiners because that board will not allow them to take the examination Yet, according to the catalogue of the Middlesex University School of Medicine for 1939 and 1940, there are 304 students now in that school preparing to enter the practice of medicine,

*Included among graduates of institutions not listed as medical schools "

and they can hardly escape knowing that when they have finished their course they must settle in Massachusetts or in one of a few other states in the Union

What are you as members of the Massachusetts Medical Society going to do about it? Before attempting to suggest an answer to that question I shall ask, What is Middlesex going to do about it? This is particularly important because in January, 1941, the school comes up before the authority which by law has been created to decide whether its graduates are to be admitted to Massachusetts examinations

Middlesex University School of Medicine has wonderful opportunities before it, relatively far more, and also relatively far more easily attained, than those of Harvard Tufts or Boston University Will it seize them? In order for it to do so there seems to me to be certain essentials, which I shall enumerate.

A Reorganization of the Board of Trustees The days of proprietary medical schools or of schools with the least semblance of control by a few interested, though excellent doctors, especially by teachers on its faculty, have passed The country will not tolerate them The public demands that the trustees of medical schools shall be divorced from personal interests in the education of the students Here lies, in my opinion, the first and greatest opportunity for Middlesex If that medical school should have on its board of trustees men like Mr Stuart Rand, who organized this year's Community Fund of Boston and is now, to the satisfaction of us all, a trustee of the Boston City Hospital, Father Robert Barry of the Catholic Charitable Bureau, whose name is a household word because of his unremitting interest in all our state and city charities, Dr David Scannell, whose years of service on the Boston School Board and of devotion to the Boston City Hospital receive just acclaim, and Dr Charles F Wilinsky whose life long work in many capacities, combined with extraordinary organizing ability, has been for the highest ideals of health for Boston, then most of the prejudice against Middlesex would disappear

Better Equipment and More Funds for Teachers The education of students at Middlesex is deficient, and in order to provide better education more money is needed for equipment and faculty even though it has built new buildings and added many full-time teachers. The students pay $410 yearly, and still larger sums if we add the amounts to which they are obligated by the purchase of books and other fees but large as is the aggregate from 304 students, we know it is insufficient It is said by some that the minimum amount per year per student necessary to furnish a suitable medical education is $1000 The medical schools of Harvard and Yale universities have budgets far in excess of this amount

Yet if one may tread upon dangerous grounds, may I point out two facts? First, that so far as published very little of the money of Middlesex goes to research The word research" appears upon one page alone in its 1939–1940 catalogue and ideal as it is to have research in a medical school there is something to be said for the pedagogical education of medical students, pure and simple It is true that at the schools with the highest budgets the education of the student is not a by product of medicine, but it happens that along with the teaching of medicine those schools have such an honorable history and their management is so trusted by men and women of means that they have been endowed with large sums for research which swell their budgets and in their administration help to raise the standard of education and ideals of its student body, although few would claim that they were absolutely essential to the education of students

No one favors more, or seeks more zealously to promote, research in medicine than do I, but we are faced now with a definite dilemma here in Massachusetts in that we need good doctors if the three Class A medical schools cannot or do not furnish them we must seek them elsewhere, and under the existing laws of the State it is certain that for the next six years at least a considerable proportion of these men will come from Middlesex

Great improvement in the medical education offered at Middlesex could be accomplished without tremendous changes in its budget If one of the larger medical schools in the country should strive to increase its budget 10 per cent it might require $100 000 or the interest at 3 per cent on over $3,000,000, whereas if Middlesex increases its budget 10 per cent the sum would be much smaller That would not be enough to be sure, but suppose Middlesex should expend next year $30,000 additional on equipment and teaching and the following year do the same or add another $30,000, what would you say to that? Probably you would reply that the budget would still be inadequate and especially so, because Tufts and Boston University are each seeking an additional $1,000,000 in endowment although their budgets are greater than that of Middlesex I grant your contention that a $1,000,000 endowment alone or its guaranteed equivalent of $30 000 a year for its budget would still be inadequate to make Middlesex a Grade A medical school Something else is necessary

High Standards for Admission of Students and Limitation of Enrollment The number of students in Middlesex appears excessive according to generally accepted standards for the facilities offered In the Middlesex 1939–1940 catalogue there are 107 students in the first-year class, 76 in the second, 54 in the third and 67 in the fourth Many will take exception to the contrast between the number enrolled in the first-year and fourth-year classes, but this is largely due to the increasing size of the recently entering classes Nevertheless, a limitation of students brought about by higher premedical requirements both in scope and passing marks for admission, and limitation of the total numbers of students in each class to an enrollment which is considered reasonable by the great majority of medical schools in the country would seem to be absolute requisites on the part of Middlesex if it is to gain the respect of both citizens and doctors in this state

To make good doctors, one must start with good men One can give good technical training to a man for four years and teach him much about medicine, but unless the man has native talent and ability, he will not be able to take his place in the community or in the field of medicine In this regard, a college (premedical) course of at least two, and preferably three or four, years in a recognized college serves as an excellent proving ground If the man survives this, makes good marks and shows evidence of good moral character, he is much more apt to make a good doctor

More clinical facilities for the education of students are necessary before Middlesex medical students can receive what many believe to be sufficient medical education, and at the moment these facilities are not available to them The students are in the position of the small boy whose mother says he must learn to swim, but does not arrange for him to go near the water And yet there are plenty of clinical facilities in the State which are not utilized With automobiles today one can travel far Already we have sanatoriums for tuberculosis belonging to the city, the county and the State We have state hospitals There is Tewksbury, 25 miles from Boston, a state institution where a wealth of superb clinical material exists, and as everyone knows, as soon as students are admitted to a hospital, standards of treatment advance I believe doors would swing open in other hospitals if the requirements listed above were met

Attitude of Alumni Finally, the attitude of the alumni of Middlesex toward medicine in general and their alma mater in particular will do more to advance that school than anything else The alumni know best the disadvantage under which they labored in securing an education and the embarrassing situations in which they have been placed since graduation, when they are asked where they graduated, and the difficulties they have encountered in obtaining hospital training unless they have gone far afield to secure it—to Vienna, Germany, France or England They more than any others can bring pressure on their alma mater to improve existing conditions, and more than any others can help by the combined expression of their views on the points I have raised and especially by securing funds to finance such a plan There have been 918 graduates from Middlesex since 1915 Probably a half to two thirds of these are now living and practicing in this state. If it was demonstrated to these men that the school would be reorganized, changes made in its board of trustees, stricter scholarly requirements enforced for the admission of students, limitation of enrollment and an open-book financial policy adopted, I believe that those men could secure from their own number, their patients and friends guarantees of $30,000 yearly for the next two years toward the maintenance of the institution, and it would be for their own personal advantage to do so as well

If Middlesex University School of Medicine could be raised out of the class of unapproved schools—and that is what I should like to see done—I suspect it would be as zealous as Harvard, Tufts, Boston University and the Massachusetts Medical Society to exert its influence in urging that Massachusetts follow the example of the country as a whole and forbid graduates of unapproved schools in the future from entrance to our state-board examinations

The Attitude of the Massachusetts Medical Society Toward Middlesex

It is all very easy to say what Middlesex could or should do, but what shall be the attitude of the Massachusetts Medical Society toward Middlesex? First of all, may I point out what our society is already doing? One hundred and twenty-two of their graduates are already members of the Massachusetts Medical Society according to the *American Medical Directory* of 1938, and very likely twice or thrice this number As soon as any others can meet all our requirements they should be admitted to membership Once admitted, they are on an equal footing with all our members in our meetings and on our committees They are fellow members, and for each fellow member of the Massachusetts Medical Society all its members have a personal interest and responsibility

Second, the Massachusetts Medical Society is fostering graduate courses These courses are steadily increasing in number, diversity and ex-

cellence All are open to the graduates of Mid dlesex, whether or not they are members of the Society This is an illustration of what we are doing to help physicians who may not have had all the opportunities they desire. And I may add here that of the 120 doctors attending the last three sessions of the special courses for graduates given by the Suffolk District Medical Society, 26 came from Middlesex Middlesex was well represented on the committee which planned the courses I consider it very essential to have this fact stated, namely, that the Massachusetts Medical Society is already doing a great deal in an educational way to help Middlesex graduates

The Boston Medical Library opens its doors to the students of Middlesex, but I suspect that if cer tain policies at Middlesex were altered, it would welcome the opportunity to be of far greater as sistance to that school

It is true that Middlesex graduates cannot join the staffs of the larger hospitals without the hospitals losing their rating by the American Col lege of Surgeons As a society we are not respon sible for that situation Whether under any and all conditions the large hospitals in our state should feel bound to conform to this ruling is a question which can well come up for discussion and careful deliberation It is a fact that each Middlesex graduate who works to the utmost to improve his knowledge and practices medicine on the highest possible plane advances the day when he and his fellow alumni will be given an op portunity in institutions of this group I am under the impression that ways can be found by which, if the members of the Massachusetts Medical So ciety and of Middlesex faculty and its graduates assiduously devote themselves to the problem, op portunities for better clinical facilities for the edu cation of Middlesex students will be found But I frankly do not believe that these changes and many, many other advantages can be brought about or offered until absolute evidence is pre sented before the State Approving Authority that greater efforts than hitherto manifest have been made to meet its standards.

If in what I have said it is recognized that I have tried to speak honestly, fairly and co-operatively, and have made real the problem of securing well-trained doctors for Massachusetts, I shall be content, because you members of the Massachusetts Medical Society, including also graduates of Middlesex, can do the rest.

81 Bay State Road

KNEE INJURIES IN ATHLETICS

A Study of End Results

FREDERICK S HOPKINS M.D.,* AND LEWIS L HUSTON, M.D.†

SPRINGFIELD MASSACHUSETTS

WHAT eventually happens to the knee in jured in college athletics is a question that has not been satisfactorily answered This paper presents an analysis of 193 cases in which the end results could be obtained out of a group of 259 major injuries of the knee treated at Spring field College from 1924 to 1937

This group is unique in that this college of about five hundred students trains students to be physical directors of Y.M.C.A.s, schools and col leges Accordingly, practically all the individ uals reported continued in much more strenuous activity than the average college graduate. While in college they participated in football or soccer in the fall, gymnastics, basketball swimming and wrestling during the winter, and baseball track and lacrosse in the spring There was a minimum requirement of one hour of athletic work a day but the average exceeded eight hours a week After graduation most of the men coached these sports and frequently took a very active part in them We know of no other group whose mem bers have continued in such strenuous forms of athletics.

Although the literature is replete with articles concerning knee injuries, with excellent discussions of the anatomy mode of injury, diagnosis and operative treatment the analysis of end results leaves much to be desired I could find but three references to the effects of conservative treatment Dickson[1] states that of 73 cases 59 recovered, 9 did not and the outcome in 5 cases was unknown Lasher[2] reports that 90 per cent of his unoper ated cases continued to give trouble Kulowski[3] is more optimistic, saying Of closed reductions the results were very good in early uncomplicated cases that were sufficiently immobilized None of these reports give the criteria used in judging the results

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There have been several good reports of the results of operative treatment, but it is not feasible to compare them because of the varying standards In a series of 88 cases of removal of a cartilage, Dickson[1] reports 86 per cent with good results, 13 per cent with incomplete and 1 per cent with unsatisfactory By a good result he means a return of function, relief from disability, resumption of former occupation and normal activity An incomplete one means relief of symptoms but does not permit extensive activity, the results in this group are believed to be due to secondary changes such as injury to articular cartilage, arthritic changes, relaxation of the ligaments and loss of muscle control

Henderson[4] gives his results in 238 of 256 cases of cartilage removal, 77.2 per cent of the patients were entirely relieved, 14 4 per cent improved, and 8 4 per cent not improved In 42 cases where the lesion was doubtful at operation, 37 per cent were cured and 40 per cent were unimproved

Lantzounis,[5] reporting on a series of 142 operations, classifies the results in 85 per cent as excellent and in 15 per cent as good, although 20 per cent of the patients with excellent results still had some minor symptoms

Shands, Hutchison and Ziv[6] in their report of 48 cases use a classification somewhat similar to that adopted in this paper, as follows "good" means that the knee can be used as effectively for strenuous exercise as before operation, "fair" that there is little or no catching, moderate pain and definite improvement, and "poor" that there is pain, locking or catching On this basis the results were good, 71 per cent, fair, 19 per cent, poor 8 per cent, questionable, 2 per cent Forty per cent of the patients stated that the knee functioned as well as the normal knee

Spirn[7] reports on 76 operations in patients followed for ten years His classification of results is "very good," indicating free motion, no pain, resumption of occupation, "good," indicating pain on long walks or in bad weather, or slight impairment of function, such as a weak quadriceps, "bad" On this basis he rated 71 per cent of results very good, 22 per cent good, and 7 per cent bad In the 41 cases of injury in athletics 82 per cent were very good, and the remainder good

Other interesting end-result figures are given by MacAusland,[8] Buzby,[9] Kulowski[3] and Lasher,[2] but after careful analysis those that have been quoted impress me as being the most valuable

CLASSIFICATION OF CASES

Football was responsible for the greatest number of knee injuries The distribution by sports was football, 90 cases (47 per cent), soccer, 24 (12 per cent), basketball and gymnasium activities, 16 each (8 per cent), track, 10 (5 per cent), wrestling, 9 (5 per cent), baseball and lacrosse 6 each (3 per cent), and 16 (8 per cent) in various other activities

It is worthy of mention that during this period there has not been a single fractured femur at the college There were 2 cases of fractured patella which are not included in this analysis Minor injuries are also excluded, and the few where the individual had forgotten about the injury years later were so classed, even though the original records indicated that they should be included

The end results were determined on the basis of a questionnaire covering every abnormality, even of the slightest degree, that had been noticed since the completion of treatment In about 30 per cent of the cases a late examination was also available The following classification was adopted

Perfect	4*a*	No further trouble
	4*b*	Recurrent trouble for a year or more, but complete recovery subsequently
Good	3*a*	Minor abnormalities, such as aches in damp weather or numbness
	3*b*	Minor pain, but not interfering with athletic activity or requiring support
Fair	2*a*	Weakness interfering with athletics or requiring support
	2*b*	Occasional slipping, swelling or severe pain, although athletics could still be continued
Poor	1	Interference with ordinary use or prevention of athletic activity

The time from the end of treatment to the determination of the end result varied from one to thirteen years and averaged six and a half years There was no significant variation in the follow-up period among the various types of injury

Each patient was placed in one of the six following groups simple traumatic synovitis with effusion, sprain of the lateral ligament, injury of the semilunar cartilage, treated without immobilization, questionable injury of the semilunar cartilage, treated conservatively, injury of the semilunar cartilage, treated by immobilization, and injury of the semilunar cartilage, treated by operation

I realize that there are probably some errors in

the assignment of cases to these groups Anyone who has seen a large number of knee injuries appreciates the difficulty of accurate diagnosis. The internal lateral ligament is intimately attached to the internal semilunar cartilage, and thus any severe sprain of the ligament puts some strain on the cartilage. If the tenderness over the cartilage is only in the line of the ligament and there is no history of locking the case must be considered merely one of sprain Several cases so diagnosed were later proved to have cartilage injury, and in that event the grouping was changed Several cases in the sprain group probably had cartilage injuries No case was considered as having a cartilage injury without a history of locking or slipping with tenderness over the cartilage. Cases with such tenderness but without the characteristic history of locking or slipping were placed in the questionable group

In general, the apparently milder grades of cartilage injury were treated by the use of crutches, Ace bandage and physiotherapy, the more severe cartilage injuries were immobilized in a plaster cast, while in those that did not respond to conservative treatment the cartilage was excised Thus the more favorable the original prognosis, the more conservative was the treatment given

TRAUMATIC SYNOVITIS

Practically all the 19 patients with uncomplicated synovitis with effusion wore Ace or Bender bandages and had physiotherapy consisting largely of whirlpool baths In the more recent cases sponge-rubber pressure was used in addition to the elastic woven bandage. In only 1 case in this group was aspiration of the effusion done Ten of the 19 patients were on crutches for from one to twenty-one days, with an average of six and a half days and a median of five The time lost from physical practice, that is active athletics, varied from three days to eight weeks, with an average of thirteen days and a median of seven days The time required for complete recovery was one to twelve weeks, with an average of four weeks and a median of three and a half weeks.

TABLE 1 *End Results of Traumatic Synovitis*

GRADE	NO OF CASES	PER CENT	
4	13	68	
4b	1	5	4 perfect
3a	2	11	
3b	1	5	16 good
2a	0	0	
2b	2	11	11 fair
1	0	0	0 poor
Total	19		

The comments on the 2 cases classed as 2b were "pain and swelling after exercise" and continued use in football with repeated aggravation repeated injury in 1935 and 1936 [the original injury occurred in 1932] from bruising in wrestling and lacrosse, not totally disabling, last winter the knee swelled a bit if struck.'

Apparently the prognosis of simple synovitis with effusion is good, with approximately 90 per cent of the results satisfactory There is a suggestion that the synovia becomes somewhat vulnerable to repeated trauma

SPRAIN OF THE LATERAL LIGAMENT

This is one of the common knee injuries There were 59 cases, in 54 of which the internal lateral ligament was involved and in 5 the external Four cases had significant effusion 1 of which was aspirated Treatment in general consisted in physiotherapy, Ace bandage and crutches. In 4 cases the knee was immobilized and in 8 it was supported with adhesive strapping Thirty-two patients were on crutches for two days to three weeks, with an average of eight days and a median of one week The time lost from physical practice varied from none to sixteen weeks, with an average of three weeks, omitting 1 patient who was barred from practice for two years The median loss of time was two weeks The time required for complete recovery varied from one week to five years with an average of twenty seven weeks Omitting the 3 cases in which more than two years was required the average time to complete recovery was nine and a half weeks and the median seven

TABLE 2. *End Results of Sprain of Lateral Ligament.*

GRADE	NO OF CASES	PER CENT	
4	17	29	
4b	10	17	46 perfect
3a	10	1	
3b	11	19	36 good
2a	5	8	
2b	5	8	16 fair
1	1	2	2 poor
Total	59		

Characteristic comments in each group were as follows 4b "Fresh injury two or three years later now normal" 3a "Occasional ache in damp weather had arthritis in 1933 [original injury in 1929]" 3b Fatigue after strenuous exercise, followed by weakness bothers on kneeling knee functions well in all forms of athletics including football 2a On a quick shift as in tennis, knee gives way, bandage usually worn for play" 2b 'Vigorous jumping or deep knee bending causes catching, knee favored in physical activity but has caused inconvenience only once or twice a year 1 Considerable trouble in the last two years [seven and a half years after injury] knee is sore and swollen at times, and requires support in the slightest athletic exertion"

A distinct sprain of the internal lateral ligament of the knee is apparently apt to have marked sequelae Probably some of these results are due to associated semilunar cartilage injury Less than half the patients have continued symptom-free, although in four fifths of the cases satisfactory end results were obtained

INJURY OF THE SEMILUNAR CARTILAGE TREATED WITHOUT IMMOBILIZATION

This group of 40 cases was considered to have injury of a semilunar cartilage diagnosed by a characteristic history of adequate trauma, locking or slipping, with tenderness localized over the cartilage The internal meniscus was involved in 37 cases and the external in 3 In 6 cases the locking was so complete that manipulation was required by the surgeon in order to reduce it Effusion was marked in 12 cases and was treated by aspiration in 2 of these

The treatment consisted essentially in rest, support and physiotherapy Thirty patients used crutches for four days to four months, with an average of fifteen days and a median of ten Ten patients did not use crutches Practically all wore Ace or Bender bandages Six wore braces, usually of the Jones type, while in the same number the knee was supported by adhesive strapping, usually of the Simpson type Physiotherapy consisted chiefly in whirlpool baths and massage, and active exercise without weight-bearing

TABLE 3 *Corrected End Results of Injuries of the Semilunar Cartilage, Treated without Immobilization*

GRADE	NO OF CASES	PER CENT	
4a	4	8	
4b	6	11	19 perfect
3a	6	11	
3b	3	6	17 good
2a	2	4	
2b	13	25	28 fair
1	19	36	36 poor
Total	53		

The time lost from physical practice varied from none to forty-eight weeks, with an average of five weeks and a median of four The time needed for complete recovery as stated by 21 patients was from two weeks to four years, with an average of eleven months and a median of five Nineteen patients continued to have sufficient annoyance not to be rated as completely recovered

Of the 40 cases treated only in this manner, 25 per cent showed perfect results, 23 per cent good, 38 per cent fair and 15 per cent poor There were 13 cases originally treated as in this group in which the cartilage was later excised, 3 of the patients were found to have crucial ligament tears By adding these 13 cases to Grade 1 (poor results) the statistics for the 53 cases are as shown in Table 3

Some of the comments according to grade were as follows 4*b* "Knee weak for two years, now well [five years since injury]" 3*a* "Knee is normal for all sports, though there is an occasional twinge when it is twisted outward", "Weakness in knee when fatigued [a professional dancer]" 3*b* "Occasional slight pain [a professional wrestler]" 2*a* "Damp weather affects the knee, brace is worn during strenuous exercise" 2*b* "After a slight twist, limped for a day or two, the knee was normal for the next six months, it seldom affects work" 1 "A sudden step on an uneven surface bothers", "Knee slips out of joint on the slightest provocation"

QUESTIONABLE INJURY OF THE SEMILUNAR CARTILAGE

There were 22 cases in which an accurate diagnosis was impossible In general these patients experienced tenderness over the semilunar cartilage but there was no characteristic history of locking or slipping There was marked effusion in 4 cases The treatment was similar to that of the first group, that is rest, support and physiotherapy One patient wore a brace, and 4 used adhesive strapping Sixteen were on crutches for an average of twelve days and a median of seven Six did not use crutches

The time lost from physical practice varied from none to twenty-four weeks with an average of five weeks and a median of two Thirteen patients gave the time needed for complete recovery as from one to thirty-six months, with an average of six months and a median of one

TABLE 4 *End Results of Questionable Injuries of the Semilunar Cartilage*

GRADE	NO OF CASES	PER CENT	
4a	3	14	
4b	5	23	36 perfect
3a	1	5	
3b	6	27	32 good
2a	4	18	
2b	3	14	32 fair
1	0	0	0 poor
Total	22		

Typical comments in this group were as follows 4*b* "Knee became dislocated two or three times a year until three years ago, has been well since then" 3*a* "Weakness at times of strenuous use, knee otherwise perfectly good" 3*b* "Slight clicking beneath patella, no pain, disability or tenderness, full physical practice, knee becomes sore in high jumping but recovers quickly" 2*a* "Knee slips in sports, but if strapped up does not come out of joint, no pain under normal conditions' 2*b* "Weakness in knee and a feeling of inse-

curity, joint slips out if weight is on the leg with the knee straight and a sudden step there is a mental hazard in athletics and gymnasium demonstrations—a catching and slipping sensation

INJURY OF THE SEMILUNAR CARTILAGE TREATED BY IMMOBILIZATION

The patients in this group of 24 cases appeared to have somewhat more serious injuries than those in the preceding group and were treated with the aid of plaster casts The external cartilage was involved in 3 cases and the internal cartilage in 21 In 12 cases the cartilages were so locked that manipulation was required for reduction general anesthesia being necessary in 5 cases There were 9 cases of marked effusion, 1 of which was aspirated

The cast was worn from one to seven weeks, the average being four weeks Recently the standard period has been three weeks Usually the cast has been bivalved for physiotherapy after one or two weeks In all cases the patient has been instructed to endeavor to prevent muscle atrophy by active muscle contraction repeated literally thousands of times a day Full weight-bearing was usually delayed for a further period Crutches were used from one to eight weeks for an average of four weeks, partial weight-bearing being permitted for the latter part of the period Active exercise with minimum weight-bearing such as swimming and bicycling has been encouraged during convalescence from all knee injuries

The time lost from physical practice varied from one to fourteen weeks, with an average of eight The interval to complete recovery as stated by

TABLE 5 *Corrected End Results of Injuries of the Semilunar Cartilage Treated with Immobilization*

GRADE	NO. OF CASES	PER CENT	
4	8	23	
4b	6	17	40 perfect
3a	1	3	
3b	1	3	6 good
2a	2	6	
2b		6	11 fair
1	15	43	43 poor
Total	35		

15 patients varied from one to twenty four months with an average of five months and a median of three

The results in 24 cases treated by immobilization alone were perfect in 58 per cent, good in 8 per cent, fair in 17 per cent and poor in 17 per cent. Correcting the tabulation by adding to Grade 1 the 11 cases originally treated in this group and later subjected to operation we obtain the figures from 35 cases shown in Table 5

Some of the comments made by this group were as follows. *4b* 'Knee has slipped three or four times but has gone back easily, no swelling, no trouble in vigorous exercise for last year and a half", "For two years knee would collapse when boarding a streetcar or the like, swelling and remaining swollen for several days, no discomfort or weakness since 1929" *3a* "Knee good as ever, rarely a click in damp weather" *3b* 'A quick twist sometimes causes pain" *2a* Sharp pain still occurs occasionally on twisting, have worn a brace during exercise for five weeks" *2b* "Several minor slippings with effusion" 1 'Knee becomes dislocated in athletics, it twists and swells if severely wrenched and locks

TABLE 6 *End Results of All Probable Injuries of the Semilunar Cartilage Treated Conservatively*

GRADE	NO. OF CASES	PER CENT	
4	15	14	
4b	1	15	29 perfect
3a	8		
3b	10	9	16 good
2a	8	7	
2b	18	16	24 fair
1	34	31	31 poor
Total	110		

If the 22 cases with a doubtful diagnosis of injury of the semilunar cartilage are assumed to be those of definite injury, the end results of the total 110 cases conservatively treated are as shown in Table 6

INJURY OF THE SEMILUNAR CARTILAGE TREATED BY OPERATION

There were 29 patients who underwent operation for the removal of injured menisci The previous history gave an average of 2.5 definite injuries preceding operation In 14 cases there was locking that could not be reduced by the patient In 9 of these this could be reduced by manipulation without anesthesia, while in 5 general anesthesia was required There was marked effusion in 11 cases The previous treatment had been immobilization in 13 cases Five patients had had no significant previous treatment. The interval from first injury to operation varied from nine days to nine years, with an average of nineteen months. Three cases were operated on a second time 1 for the removal of the external cartilage, 1 for a retained fragment of cartilage and 1 for a synovial fringe

Four patients were operated upon by other surgeons, which leaves 25 cases where the operative findings are known In 15 of these the cartilage was fractured 5 of the fractures being of the bucket handle type. There were synovial fringes, fat tabs or synovial villi in 13 cases The crucial

ligaments were torn in 4 cases, and in 2 of these the Bennett type of fascia-lata repair was done In 8 cases both cartilages were removed at the same operation, in 4 through separate lateral incisions, and in 3 through a patella reflecting incision, in 1 it was possible to remove the external cartilage through the usual median incision In only 1 case was the external cartilage removed without the internal The routine incision was a vertical incision of the Jones or hockey-stick type Each layer was incised in a different plane in order to minimize scar adhesions Usually a tourniquet was used, and this was removed after the application of a padded circular plaster cast

The anesthetic adopted was local novocain in 16 operations and ether in 13, spinal anesthesia was used in 1 case There were no difficulties referable to the anesthesia except in 1 case, in which the skin over the entire area on the mesial aspect of the knee which had been infiltrated with novocain sloughed off Fortunately the joint and ligaments were not involved Following skin grafting, a perfect result was obtained, and the patient later became captain of the college gymnasium team

The usual postoperative procedure was to start active motion on the fifth day and at the same time to replace the cast with an Ace bandage In some of the earlier cases and in those with torn crucial ligaments, the cast was used for longer periods, up to seven weeks In such cases it was bivalved in order to permit exercise and physiotherapy After about a week the patient was up on crutches and continued to use them at least until all effusion had subsided The time on crutches

TABLE 7 *End Results of Injuries of the Semilunar Cartilage, Treated by Operation*

GRADE	NO OF CASES	PER CENT	
4a	10	34	
4b	0	0	34 perfect
3a	7	24	
3b	2	7	31 good
2a	2	7	
2b	7	24	31 fair
1	1	3	3 poor
Total	29		

varied from one to seven weeks, with an average of three The time from operation to walking without assistance was from ten days to eight weeks, with an average of four weeks, the most frequent time was three weeks The time lost from college classes varied from one to four weeks, with an average of three weeks The loss of time from physical practice was from one to thirty months, with an average of five months and a median of three Nearly half the patients resumed physical practice within two months

The final results are shown in Table 7

Some characteristic comments were as follows 3*a* "Played varsity football in three months, the knee is now a little numb below incision, and sometimes aches on stormy days" 3*b* "Limp when fatigued, do not seem handicapped in any activity" 2*a* "Play basketball, touch football and baseball sometimes without a brace, but an element of fear enters my mind and I wear the brace for the sake of safety" 2*b* "Take part in all athletics, no trouble if I keep the leg in excellent condition, so long as I work it hard the knee functions finely, but if I neglect this regimen for two or three weeks it slips, catches, causes pain and swells, and it is impossible to use it for a week or more, I am entirely satisfied with the results" 1 (This patient had a secondary operation for removal of a synovial fringe which caused a catching sensation This was done sixteen months after the primary operation Examination eight months after the final procedure showed an apparently normal knee with full painless motion and no tenderness The patient attributed the full return of strength to a daily three-mile run) "Still weak. The knee swells when used vigorously, catching is apparently caused by a growth in front of the knee joint, the leg will not bear weight in a bent position [report six years after operation]"

An attempt was made to correlate the results with various factors At first there seemed to be little relation between the time from injury to operation and the end result However, when the cases were divided into three sub-groups the results appeared to be best in the early cases of 5 operations within one month of injury, 4 gave Grade 4 or perfect results, and 1 gave a Grade 2 result, in other words, the results were 80 per cent good The next best results occurred in the 8 late cases, in which there was an interval of over two years between injury and operation Only 1 result was rated as Grade 4, but 5 were rated as Grade 3, and 2 as Grade 1, in other words, 75 per cent of the results were good In the intermediate group of 16 cases, with an interval of one month to two years between injury and operation, only 9, or 56 per cent, were classified as good, that is of Grade 3 or 4 This suggests that prompt operation avoids the annoying complications resulting from repeated synovial irritation The relatively good results in the late cases suggest that they were less severe injuries in which operation did not seem urgent

Of the 15 cases of fractured cartilage, 6 gave results that were rated Grade 4 and 6 as Grade 3, while the results in 2 were of Grade 2 and in 1 of Grade 1, in other words, there were 80 per cent good results This is in accord with Henderson's[4] findings, where the results were better

in the more obvious cartilage injuries. Similarly, of the results in 17 cases with a previous history of locking, 47 per cent were of Grade 4 and 70 per cent of Grade 3 or 4

The results in 13 cases with synovial tabs which required excision were also satisfactory Forty six per cent were of Grade 4 and 77 per cent were Grade 3 or 4 Of the 11 cases with marked pre operative effusion, 64 per cent of the results were rated as Grade 3 or 4

The type of incision was apparently of no sig nificance. Removal of both cartilages gave re sults slightly better than the general average. Of those in the 9 cases, all but 1 were rated as Grade 3 or 4, or 89 per cent good

The anesthetic apparently had no significant ef fect on the results Of the 16 cases done under local novocain anesthesia, the results in 5 were rated as Grade 4, and in 6 as Grade 3, or 81 per cent good Seven or 54 per cent of the 13 operations performed under ether gave good re sults. The result in the 1 case done under spinal anesthesia was placed in Grade 4

Of the 4 operations performed by other sur geons, 1 gave a Grade 4 result and 3 Grade 2 results.

There were 4 cases with associated torn crucial ligaments In 2 of these there was no marked ab normal mobility preoperatively, the result of one was rated as Grade 4 and the other as Grade 2. The 2 cases with marked abnormal mobility re ceived the Bennett type of fascia lata repair, and the results were rated as Grade 2.

DISCUSSION

A summary of final results of cartilage injuries arranged according to treatment is shown in Table 8 "Good" includes all Grade 3 or 4 re

TABLE 8. *Comparative Results of All Injuries of the Semi lunar Cartilage*

RESULT	TYPE OF TREATMENT: NOT IMMOBILIZED		PARTIALLY IMMOBILIZED		ALL CONSERVATIVE		OPERATIVE	
	No. of Cases	Per Cent	No. of Cases	Per Cent	No. of Cases	Per Cent	No. of Cases	Per Cent
Good	19	36	16	46	50	45	19	66
Fair	15	28	4	11	26	24	9	31
Poor	19	36	15	43	34	31	1	3
Totals	53		35		110		29	

sults, and signifies that the patients engaged in strenuous athletics with no difficulty "Fair" rep- resents the Grade 2 results, indicating that while engaging in active athletics the knee gave trouble or required some support Where there was distinct difficulty or inability to use the knee for strenuous activity, or operation was resorted to, the results are classified as "poor"

Inasmuch as the best proof of serious damage of a semilunar cartilage short of surgical explora tion is locking, a comparison is made of the groups that required manipulation by the surgeon before the knee could be extended The results of the 18 locked cases treated conservatively were 72 per cent good, 17 per cent fair and 11 per cent poor Correcting these figures by adding all the operative locked cases to Group 1 of the non operative cases gives the results shown in Table 9

TABLE 9 *Corrected End Results in Locked Cases*

RESULT	TYPE OF TREATMENT: NOT IMMOBILIZED		PARTIALLY IMMOBILIZED		ALL CONSERVATIVE		OPERATIVE	
	No. of Cases	Per Cent	No. of Cases	Per Cent	No. of Cases	Per Cent	No. of Cases	Per Cent
Good	5	33	8	47	13	41	11	79
Fair	1	7	2	12	3	9	3	21
Poor	9	60	7	41	16	50	0	0
Totals	15		17		32		14	

The figures for this group parallel those in the larger groups closely enough to constitute some evidence of the correctness of the diagnoses, al though general results were better in the locked cases

Since there is such a wide variation possible in the classification of a result by such a term as "good" or "fair" it is to be hoped that someone will report a larger series with comparable sub- groups, since the number of cases here given is too small to make the sub groups statistically ac curate. If the mere ability to engage in athletics were considered sufficient reason to classify a re sult as good, all the operative results might be so classified Yet to the individual the various ab- normalities are of real significance

The large number of knee injuries that continue to cause trouble make this the most important group of all athletic injuries. This particular se ries of men, who continue in their life work as physical directors, is an especially valuable one in that it demonstrates what an injured knee does under continued strain In general the more strenuous the use the greater the discomfort The one exception to this rule, where the patient re ported that his knee was perfect only when he used it vigorously, is an illustration of good mus- cle tone s protecting torn or stretched ligaments. It is probable that some of the symptoms reported are due to subsequent injuries.

One possible complication that has not been discussed in any group is limitation of motion No individual made such a complaint and in the

patients examined there was no significant limitation

SUMMARY AND CONCLUSIONS

The end results of a series of 193 injuries to the knee have been analyzed Eighty-nine per cent of the cases of simple synovitis and 81 per cent of those with a lateral ligament sprain showed good final results All the patients were able to continue active athletics The results of semilunar cartilage injury treated by immobilization (46 per cent good) are sufficiently better than those treated merely by bandaging, rest, crutches and physiotherapy (36 per cent good) to warrant the use of a plaster cast as soon as a diagnosis can be made The results of conservative treatment are so satisfactory, nearly half being good, that we believe it should be tried in nearly all cases before resorting to operation Of the cases that still have disabling symptoms the majority can be cured (66 per cent good results), and all have been sufficiently improved by operation to engage in active athletics

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SULFANILAMIDE IN THE TREATMENT OF GONORRHEA*

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THE action of sulfanilamide in gonococcal infections has received considerable attention ever since the report of Dees and Colston [1] Its efficacy has been reported as varying from 40 to 90 per cent [2 3]

In undertaking an evaluation of sulfanilamide, a preliminary experimental study was carried out by Cohn,[4 5] who was successful in producing an infection in mice by intraperitoneal inoculation He was able to show that the fatal results following the production of gonococcal infection in mice could be prevented by a subcutaneous injection of 1 cc of a 1 per cent solution of sulfanilamide The same protection could be produced when the mice were fed 15 to 25 mg of sulfanilamide by gavage.

TABLE 1 *Classification of Patients*

TYPE OF TREATMENT	NO OF CASES	RACE		DISEASE		
		WHITE	NEGRO	ACUTE	CHRONIC	AVERAGE DURATION days
Sulfanilamide	100	51	49	85	15	5 0
Sulfanilamide and vitamin C	23	6	17	23	0	15 2
Sulfanilamide and vaccine	43	19	24	34	9	26 5

Our first study[6] was based on 100 patients, in all of whom a diagnosis of gonorrhea had been made on clinical evidence, positive smear and positive culture The types of patients treated are shown in Table 1

The method of treatment used for adults was to administer 80 gr (5.2 gm) of sulfanilamide‖ every twenty-four hours in four divided doses for the first four days, and 40 gr (2 6 gm) for the next seven days The fluid intake was limited to 1000 cc a day No other treatment was given

Approximately 25 per cent of the patients showed toxic manifestations as a result of the administration of the drug These included dizziness, diarrhea, nausea, rash, fever, tingling sensation of the extremities, dyspnea and palpitation and occasionally general depression No patient experienced marked or acute anemia

The criteria of cure used were the absence of symptoms and signs, repeated negative smears and cultures from the urethra, cervix, prostatic secretion and urinary shreds, provocative instillation of silver nitrate, passage of sounds in men, the drinking of alcoholic liquor, followed by negative smears and cultures The final step was permission for protected sex contact, with subsequent negative smears and culture examina-

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‖The sulfanilamide (Prontylin) used in this study was supplied through the courtesy of the Department of Medical Research Winthrop Chemical Company New York City

tions The investigation was carried out in successive steps, each one being successfully passed before the next was instituted The results obtained in this first group of patients are indicated in Table 2.

TABLE 2. *Results of Treatment*

TYPE OF TREATMENT	NO. OF CASES	CURED	PER CENT
Sulfanilamide	100	45	45
Sulfanilamide and vitamin C	23	11	48
Sulfanilamide and vaccine	43	35	81

Concentration of sulfanilamide in the blood in this group showed no constant relation to the results obtained The highest concentration found was 12.2 mg per 100 cc after the patient had taken 160 gr (10 4 gm) in three days and 80 gr (5.2 gm) in the twenty four-hour period preceding determination The lowest concentration was 1.5 mg per 100 cc., found after 80 gr had been taken in a twenty-four hour period Sulfanilamide disappeared from the blood stream in an average of five days after the cessation of its administration The longest time that the drug remained in the blood stream was twelve days after discontinuance. In patients who failed to respond after a four-day interval, increasing the dosage even up to 140 gr (9 1 gm) per day had no additional effect on the progress of the disease. The details in the cases successfully treated are shown in Table 3

TABLE 3 *Data in Cases Successfully Treated*

DATA	SULFANILAMIDE	SULFANILAMIDE AND VITAMIN C		SULFANILAMIDE AND VACCINE	
		SULFANILAMIDE	VITAMIN C	SULFANILAMIDE	VACCINE
Total dose	gm	gm	gm	gm	cc
Lowest	6.0	9.3	0.2	0.7	0.02
Highest	115 0	40.0	1 5	40 0	3.22
Average	36.0	35.8	1 4	12.4	0 65
Negative smear	day	days		days	
Lowest	1 0	2.0		2.0	
Highest	25.0	18.0		51 0	
Average	4.6	5.2		11 8	
	gm	gm	gm	gm	cc
Average dose 1 for smear became negati e	11.3	20 1	0.51	9..	0.3
Negativ culture	days				
Lowest	1.0				
Highest	28 0				
Average	4.9				
Disappearance of discharge	days	days		days	
Lowest	1.0	0		5 0	
Highest	14 0	14 0		54 0	
Average	4 0	11.0		19.3	
Negative urine		days		days	
Lowest		0		2.0	
H ghest		45 0		57.0	
Average		12.1		17.7	
	day	days		days	
Average tim for cure	13.7	11.0		19.3	

In surveying the results obtained with this first group of patients, the low percentage of those apparently cured suggested that the number of cases might be increased by supplementing sulfanilamide with some modality which would increase the response of the patient or enhance the bactericidal or bacteriostatic effect of sulfanilamide.

In order to investigate this possibility, a group of patients were treated with a combination of sulfanilamide and vitamin C* The use of vitamin C was suggested by the results reported by Jusatz[7] in increasing the specific antibody production in animals by the intravenous administration of this vitamin The method of treatment was to add to the sulfanilamide as given in the preceding group of patients vitamin C intravenously every other day, starting with 100 mg and increasing by 100 mg until a maximum of 300 mg had been reached Another small series of patients, in whom smaller doses of sulfanilamide were given together with smaller doses of vitamin C, responded in approximately the same time as those receiving the larger doses

Another group was treated with a combination of sulfanilamide and gonococcal vaccine. It was thought that the addition of the vaccine might increase the antibody production and so enhance the effectiveness of sulfanilamide. The patients received an initial test dose, intradermally of 01 cc. of the vaccine containing 5,000 000 000 gonococci per cubic centimeter If the area of erythema did not exceed 5 cm in diameter an initial dose of 05 cc. of vaccine was given subcutaneously in the mid region of the anterior thigh The amount was increased by 05 cc. at biweekly intervals. In some cases the dosage was increased to a maximum of 1.0 cc., in others the increase in vaccine was continued beyond this point. In the former cases the amount of sulfanilamide administered was the same as in those receiving sulfanilamide alone. Where the dosage of vaccine was carried beyond 1 0 cc., 5 gr of sulfanilamide per day was administered (See Tables 2 and 3)

DISCUSSION

In comparing the cases treated with sulfanilamide alone and those treated with combinations of sulfanilamide and vaccine or vitamin C, it appears that in the latter group the amount of sulfanilamide required to produce effective results was considerably less The advantage of combination is shown in the very much lower incidence of reactions to sulfanilamide necessitating discontinuance. The percentage of such reactions was only 14 per cent in the cases receiving full doses of sulfanilamide and vitamin C and 11 per cent in those receiving sulfanilamide and vaccine, as

*The vitamin C (Cebion) used in this study was supplied through the courtesy of Merck and Company Incorporated Rahway New Jersey

compared with approximately 25 per cent in those receiving sulfanilamide alone in equivalent doses In the cases in which the dosage of sulfanilamide was reduced, it caused no reaction

The decrease in the dosage of sulfanilamide in cases treated with combinations of the drug with vitamin C or vaccine apparently had no adverse effect on the time required to effect a cure The average time required in the cases treated with sulfanilamide and vitamin C was 11 0 days, as compared with 13 7 days in those treated with sulfanilamide alone and 19.3 days in those treated with sulfanilamide and vaccine During the administration of vaccine, however, patients were frequently left untreated for a week or more, in order that the full measure of vaccine action might be utilized before continuing the treatment These rests are responsible for the apparent increase in the time required for treatment

Further experiments are being continued in an attempt to ascertain the optimum dosage of sulfanilamide in combination with vitamin C or with vaccine It is of course quite possible that some other modality as adjuvant treatment will prove more efficient than either of those here indicated From the trend of our results in a limited group of patients it appears probable that some type of treatment combined with sulfanilamide will make the latter drug more effective

It is also possible that other preparations of the sulfonamides will be elaborated which are less toxic and more efficient in treatment Such preparations are in existence, and we may be able to evaluate some of them in the near future

SUMMARY AND CONCLUSIONS

One hundred patients with gonorrhea were treated with sulfanilamide alone, 45 per cent of whom were cured in an average of 13 7 days

Twenty-three patients were treated with sulfanilamide and vitamin C, of whom 48 per cent were cured in an average of 11 0 days

Forty-three patients were treated with a combination of sulfanilamide and gonococcal vaccine, of whom 81 per cent were cured in an average of 19.3 days

It appears from the figures reported in this study that to enhance the action of sulfanilamide by adjuvant therapy, which either increases the antibody formation or increases the efficiency of sulfanilamide, is a promising method of treatment Further studies along this or related lines will be needed before more precise information becomes available

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REPORT ON MEDICAL PROGRESS

NEUROLOGY

JAMES B AYER, M.D.*

BOSTON

A NUMBER of new procedures, in both diagnosis and treatment, mark recent progress in neurology, some of which should find a place in next year's report. The present discussion concerns work dating farther back than a year which seems to be of established value. To be sure, some of the subjects reviewed have been treated in part by writers in allied fields, but this fact makes it all the more likely that the subjects so treated are worth while.

ELECTROENCEPHALOGRAPHY

During the last few years the study of brain waves" has been increasing rapidly in many laboratories of physiology. The number of papers on this subject has multiplied to such an extent as to occupy nearly half the space of the newly founded *Journal of Neurophysiology*. But only recently has this work become of clinical significance, and its range of dependability is still a matter for study. According to Walter[1] there are two types of waves possessing clinical significance: alpha waves of ten-second intervals which are a constant product of the brain and may be influenced by many psychological, physical and chemical stimuli, and delta waves of slower rhythm, which appear to be the product of a disordered cortex. In epilepsy both grand mal and petit mal, a disordered rate of production of waves, with injection of spikes, is now recognized as so characteristic that in a doubtful case the diagnosis is generally considered as proved by this finding. Basing their conclusions on the electroencephalogram, Gibbs, Gibbs and Lennox[2] speak of epilepsy as "paroxysmal cerebral dysrhythmia."

Localization of cerebral lesions is now made possible by the electroencephalogram, and extraordinarily accurate localization has been accomplished as shown by Williams and Gibbs.[3] At this time it seems that exact localization is to be expected in tumors in or near the cortex, with less accuracy for other types of pathologic lesions and for deep tumors. Thus we have come to rely most on electroencephalography in confirmation of cortical tumors, and on pneumoencephalography in cases of supposedly deep tumors. With the impetus well started, it is likely that electroencephalographic reports will soon become routine in the analysis of difficult brain cases.

Correlation of the electrical potential of the brain with body and mind types would seem unreasonable, but work in progress suggests that there are different rhythms corresponding with phlegmatic and with exuberant personalities. The brain waves of identical twins are found to resemble each other closely.

DILANTIN IN EPILEPSY

By a painstaking and systematic study on dogs in which convulsions were produced by a known amount of a convulsant drug, Merritt and Putnam[4] were able to study the comparative preventive effects of a large number of drugs. Analysis showed that a barbiturate, sodium diphenyl hydantoinate (Dilantin), discarded by one of the large pharmaceutical houses as a poor hypnotic, was a more effectual anti-convulsant than phenobarbital. A large number of patients have been treated by Merritt and Putnam and by others with most encouraging results. No ill effects other than dermatitis are reported by these investigators. Dilantin seems already to have taken its place as a most useful drug in prevention of convulsions, but reports of its use over a long period of time must be awaited for full appraisement.*

DISORDERS OF MUSCLE

Three diseases, or more properly physiologic disorders, of muscle have recently been brought under partial control by medical means. These are myasthenia gravis, myotonia congenita and familial periodic paralysis.

Myasthenia gravis was until 1930 treated chiefly by rest. In that year Edgeworth observed in her own case that fatigability was greatly reduced by ephedrine. In 1934 Walker used Prostigmin hypodermically with success. It is now possible, by judicious employment of Prostigmin orally, to re-

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1. The program for the June, 1939 meeting of the American Neurological Association was a summary of ... paper by Merritt and Putnam in which it is stated that 342 patients have now been treated with Dilantin and that this drug has been more effective in 79 per cent of the cases than treatment by previous methods, whereas only ... per cent of patients treated by older method did better than under Dilantin. They also report: "On the whole patients have tolerated the drug very well and have stated that they felt better than on any other form of treatment. This was particularly true when relief of attack was obtained. Certain toxic reactions to the drug were encountered, chiefly in the gastrointestinal tract, the skin and the central nervous system.

store to apparent health a certain number of persons rendered helpless by myasthenia Each patient must be studied for the correct amount and required frequency of the drug, an average, according to Viets et al,[5] being 15 mg eight times daily Studies are under way which are designed to lessen the frequency of medication and render the treatment less expensive Two such variations in treatment have been tried with success Potassium given with Prostigmin has in some cases given better results than Prostigmin alone, and Lanari[6] has used Prostigmin in oil by injection, and has found a longer effect than that obtained with aqueous solutions

Viets and Mitchell[7] have elaborated the "Prostigmin test," and advocate it for suspected cases of this disorder They list a number of diseases simulating myasthenia which under the conditions of the test show no benefit from the injection Noteworthy as refractory to the therapeutic test are progressive muscular dystrophies and the myasthenia of pregnancy (Fekete[8]) I have encountered alarming symptoms in a case of progressive bulbar palsy

Myotonia congenita (Thomsen's disease) is a rare disturbance, familial in character, in which the exercise of muscle function results in temporary paralysis Both upper and lower extremities are affected, although the symptoms are most frequently observed in the hands, which on repeated clasping remain cramped and cannot be relaxed for several seconds No pathologic lesion has been described, and as in the case of myasthenia gravis the neuromuscular junction is thought to be the vulnerable locus of disordered physiology But in myotonia, in contradistinction to myasthenia, Prostigmin increases the symptoms Kennedy and Wolf[9] have found that quinine is effective in preventing the muscular spasm of this disease. Large doses must usually be given, 5 gr of quinine hydrochloride three times or more daily often being necessary Unfortunately, the amount of quinine required may not be tolerated by the patient, as in a case of my own now under treatment Kennedy and Wolf emphasize the pharmacologic antagonism of myasthenia and myotonia, Prostigmin benefiting the former and exaggerating the symptoms of the latter, and quinine increasing the weakness of myasthenia while relieving the spasm of myotonia The reciprocal action of these drugs has been confirmed by other observers and by me Further study of these and other drugs is necessary for a better understanding of the method by which they act, and a paper by Kolb et al[10] attempts to do this

Familial periodic paralysis is a rare disease in which generalized flaccid paralysis comes on without warning, generally during sleep The muscles are unexcitable by electricity but do not waste, and reflexes are lost When the paralysis disappears in a few hours or days, function is completely restored As indicated by its name, the disease appears to be hereditary

Through the observations of Herrington,[11] Aitken et al,[12] Gammon[13] and Pudenz et al,[14] it seems certain that some disorder of potassium metabolism is at fault All these investigators agree that the paralysis can be promptly overcome by the administration of potassium It has also been shown that glucose tends to produce paralysis In my own single case, 100 gm of glucose given by mouth brought on paralysis The potassium concentration in a normal state was 4.3 milliequivalents per liter, but fell to 2 milliequivalents during an attack The patient was given 2 gm of potassium chloride by mouth daily and during the next six months had only one attack, presumably caused by eating candy

There is also uncertainty in this disease as to where and how the potassium radical works In myotonia and myasthenia the neuromuscular junction appears to be the vulnerable point In familial periodic paralysis, however, the investigations of Pudenz et al[14] tend to exonerate it No satisfactory explanation as to the effect of the potassium radical has yet appeared

PITUITARY ADENOMAS

While the surgical treatment of tumors of the pituitary gland has generally been accepted as the best, some doubt has been cast on it by advocates of x-ray therapy Perhaps the most reliable advocates of the latter are Hare and Dyke,[15] who report improvement or stationary vision in 7 per cent of patients with chromophil adenoma and in 53 per cent of those with chromophobe adenoma The recent report of Henderson,[16] based on a study of 338 cases from Cushing's series does not answer the question of preference, as would be expected from a surgical clinic, but his conclusions strongly indicate that surgery plus x-ray therapy is more effective than x-ray alone He writes

> Only 32 8 per cent of patients after trans-sphenoidal operation alone failed to show evidence of symptomatic recurrence at the end of five years, this was increased to 65 3 per cent for those who had x ray therapy in addition Of the patients who had a transfrontal operation alone, 57 5 per cent remained free from recurrence at the end of five years, and this was increased to 87 1 per cent for those who had transfrontal operation plus x ray therapy

Henderson quite rightly states that advocates of x-ray therapy alone cannot yet report on long range observation So while it is apparent that x ray alone is effective, we must admit that, in the hands of Cushing, combined operation and x ray is probably best, further, it is generally agreed that, if under x-ray treatment blindness progresses, no time should be wasted in advising operation

MÉNIÈRE'S DISEASE

Two methods of treatment for this crippling malady have emerged in the last few years Surgical treatment, as elaborated by Dandy is still the best known procedure and that most certain to produce good results This operation as now performed is selective in that the auditory fibers are left to function, and deafness is not a sequela

In 1934 Furstenberg et al.[17] advocated a diet low in salt and high in ammonium chloride The theory behind their successful treatment was based on the assumption of a disordered sodium metabolism Talbott et al[18] have put this theory to chemical test, and conclude that "neither alkalosis, hydration nor a high sodium intake is associated with the pathogenesis of Ménière's disease." They find that potassium chloride, 6 gm in a 25 per cent solution, given daily by ingestion, produces results equal to those of the Furstenberg regime. No *restriction* of salt in the diet is required

VITAMIN DEFICIENCY

More than ten years ago Shattuck[19] called attention to the close relation of alcoholic polyneuritis to beriberi At that time it was widely taught that there were two varieties of neuritis, that due to exogenous poisons such as alcohol lead, arsenic and so forth, and that due to endogenous toxins, diabetes, infections and so forth

During the last decade there has been a tendency to bring all the neuritides under a single pathogenesis, for example vitamin B1 deficiency, and this point of view is expressed in a recent paper by Shattuck[20] Not only are neuritides so explained but also a number of myelopathies and cranial nerve disorders Lewy[21] fully accepts this point of view, and attempts to explain the underlying difficulty as one of liver deficiency He states "As soon as more than one third of the mobile vitamin B stock of the liver has been exhausted, the fixed depot of the nervous system begins to decrease At this moment the first nervous symptoms appear

It is often a satisfaction to find one cause for *so many similar and dissimilar* conditions, and one must admit experimental evidence also as proving the importance of vitamin B1 deficiency in disorders of the nervous system However pleasing the analogy, it is unfortunately true that treatment along the lines indicated yields variable and often most unsatisfactory results It has been my experience that not all so-called deficiency neuropathies yield equally well to treatment with vitamin B

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CASE RECORDS OF THE MASSACHUSETTS GENERAL HOSPITAL

ANTEMORTEM AND POSTMORTEM RECORDS AS USED IN WEEKLY CLINICOPATHOLOGICAL EXERCISES

FOUNDED BY RICHARD C. CABOT, M.D

TRACY B MALLORY, M.D., *Editor*

CASE 25291

PRESENTATION OF CASE

A seventy-year-old white woman was admitted complaining of cough, dyspnea, choking spells and a sense of oppression in the right upper chest.

As a child she had had acute osteomyelitis in the left tibia. Twelve years prior to admission she had had an attack of phlebitis in the left leg. She was seen by a cardiologist two years later (ten years prior to admission) because of easy fatigue, and he stated that she did not have any evidence of cardiac disease. He made a diagnosis of myasthenia, and she was given suprarenal extract for some time. Eight years before entry her blood pressure was 215 systolic, 105 diastolic. It was thought at this time that she had some emphysema. One year later she began taking nitroglycerin and aminophyllin frequently because it was thought that she showed evidence of vascular spasm. She had no anginal symptoms. Four years before admission the cardiologist made a diagnosis of slight hypertensive heart disease. Her blood pressure was 180 systolic, 95 diastolic. A basal systolic murmur was heard the following year. The blood pressure was 190 systolic, 95 diastolic. She was given aminophyllin and Nembutal. Seven months prior to admission her blood pressure was 165 systolic, 95 diastolic. An electrocardiogram was normal, and she was said to be in good condition. Three months before entry, while working in her garden, she had rather an abrupt onset of a feeling of congestion in the chest (? "wheezy") and a troublesome non-productive cough. The latter persisted and was worse on exertion. She was also quite short of breath on exertion and required three pillows at night. One month later she had three rather painful episodes of mid-substernal oppression only partially relieved by nitroglycerin. The last episode lasted about fifteen minutes. Examination at that time showed no congestion of the cervical veins, lungs or liver and no edema. P_2 was not especially loud. The heart was regular, at a rate of 94 with an occasional premature beat. The sounds were normal. The blood pressure was 160 systolic, 85 diastolic. An electrocardiogram showed flat T waves. She was given Urginin because digitalis had upset her in the past. This drug was discontinued shortly after it was begun, and she resumed the use of aminophyllin and luminal. Two months before entry she again became "wheezy" and uncomfortable. Examination showed a full right jugular vein and slight pitting edema of the shins. P_2 was not loud, but the lungs were "wheezy." An electrocardiogram showed slight T-wave inversion in Leads 1 and 2. X-ray examination at this time showed a normal diaphragm. The left costophrenic angle was hazy, the right obliterated. There were mottled areas of density over the left lower and the greater portion of the right lung field. This mottling appeared to be composed of small irregular fleck-like consolidations with normally aerated lung in between. At the left base and the right mid-lung field there were confluent areas of density up to 4 cm. in length and about 2 cm. in width. The lateral view showed that the areas of density on the right side occupied the anterior margin of the right upper and the apex of the right middle lobe. These shadows were sharp in outline and triangular in shape. The interlobar pleura was moderately thickened. The right lung root was obscured by irregular density. There were no masses in the upper mediastinum or at the left lung root. The heart was grossly enlarged, the enlargement being chiefly in the region of the left ventricle. The total transverse diameter of the heart was 16.2 cm., and the internal diameter of the chest 26.2 cm. One week before entry she had a severe pain in the upper sternum coming through from the back and not going down the arm. Her cough was paroxysmal, dry, persistent and very bothersome. At times she struggled to get her breath. She had lost a small amount of weight, though her appetite had remained fairly good. Her temperature at times rose to 101°F. in the evening. During the next few weeks she began to notice a sense of oppression in the right chest, but no acute pain. Three days before entry, for the first time she began to have tenderness in the veins over the left lower leg. She also developed pains in the lower part of the sternum and in the back, which were slowly relieved in an hour with three tablets of nitroglycerin. They seemed to be helped more by an electric pad. For the previous three or four weeks she had had dyspnea, dry cough and very distressing choking spells. The day before entry she had a fainting spell and marked dyspnea.

Physical examination showed a well-developed and nourished woman with dyspnea, cough and choking attacks. There were diminished breath sounds in the right upper anterior chest and wheezes suggestive of bronchial pressure or obstruction. The heart was slightly enlarged. The blood pressure was 170 systolic, 85 diastolic. There

was some tenderness of the veins about the right internal malleolus The left leg was moderately swollen There were no other significant physical findings

The temperature was 99 1°F., the pulse 80, and the respirations 24

Examination of the urine was negative X ray films of the chest showed a marked change in the right side of the chest since the last examination The density at the right lung root appeared as a dense triangular area of consolidation occupying the medial aspect of the right upper lobe The base of the right upper lobe was slightly pushed upward, but the trachea was normal in position The diaphragm remained at the same level but both costophrenic angles were obliterated The fleck like areas of consolidation scattered through the right lung appeared larger In some areas they were round The left upper lobe remained the same. The size of the heart could not be definitely determined because the film was not taken at 7 feet, but it appeared that the heart was larger There were areas of consolidation which obscured the right border of the heart These were fairly sharp in outline.

Her condition remained about the same until the seventh hospital day when she developed increasing dyspnea and cyanosis She was put in an oxygen tent at 7 p m and improved Seven hours later her dyspnea and cyanosis suddenly increased and she had choking attacks Her condition became rapidly worse, and she died at noon on the eighth hospital day

Differential Diagnosis

Dr. Maurice C Pincoffs * The most significant facts about this case in my opinion are the occurrence in an elderly woman of areas of consolidation in the lungs — some considerable in size and others small and described as fleck like — and the persistence of these areas over a period of many weeks and their probable increase in size in successive films

These lesions were associated, it is true, with many symptoms that are a little difficult to interpret The onset of the illness was sudden, with an attack of dyspnea, and later there were numerous attacks of sudden dyspnea and of faintness. The lesions in the lungs, or some of them were described as wedge shaped So that there are a number of features that suggest multiple emboli with pulmonary infarctions

Pulmonary infarctions may be cardiac in origin This patient had been known as a fairly well compensated hypertensive individual With the onset of her last illness she found herself more dyspneic on exertion and began to require three pillows for sleep A silent coronary thrombosis might be suggested, with mural thrombi from which the emboli arose. But there are no other definite supporting data to implicate the heart.

A more obvious source of emboli would seem to be the swollen left leg There is a history of osteomyelitis in the left tibia as a child, of an attack of phlebitis in this leg twelve years later and of a return of pain and swelling in the leg at about the time of this last admission One wonders then whether there was a hidden phlebitis deep in that leg, — or in both legs since both were painful — which might have been the source of these emboli

Several things, however, lead me away from the idea that this was an ordinary instance of pulmonary embolism from phlebitis The frequency and the character of the attacks are against it, the many small areas of lung involvement are against it the long persistence of these areas in successive x ray films and especially the increase in size of these areas are even more against it.

I believe that in this case the difficulties were caused by metastatic growths in the lung I do not believe one need divorce the question of embolism from that of malignancy It is true that the average metastatic growth in the lung develops insidiously often with no symptoms at all, that it is large and round as a rule and is found pretty well out in the parenchymal though it may well be near the hilum But from time to time, gross tumor emboli lodge in the lung causing occlusive changes in smaller vessels This is another type of tumor invasion of the lung Might it be that we were seeing something of this latter kind in this case, and that the clinical episodes came on with abruptness because they were due to gross particles of tumor emboliz ing the lung — as opposed to the usual microscopic tumor metastases which grow silently and start without any evidence of shock? If one had widely scattered areas of that kind one might have wheeze, dyspnea and paroxysmal cough from those which were nearer to the large bronchi and caused local bronchial irritation I think it is possible at least to fit the data into such a picture without stretching the facts too much

If this was malignant disease, one should not omit discussion of the possibility that it was a primary bronchiogenic carcinoma with secondary invasion of the lung There was no evidence of bronchial stenosis. The lesions were very widely spread and apparently changed rapidly in character The suddenness of clinical onset also would be unusual in bronchiogenic carcinoma The pains

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in the legs and the swollen left lower leg are left unexplained

On the other hand, if one leans toward believing that the primary lesion was not in the lung, one would be led to examine the pelvis carefully to see whether it was there A mass in the pelvis might cause pain in the legs, and by pressure or invasion might obstruct the venous return from the left leg and so cause edema of this extremity Both ovarian and cervical new growths metastasize to the lungs not infrequently I have seen a large ovarian carcinoma lead to many tumor emboli in lung vessels

However, we have not enough evidence to warrant the diagnosis of a primary pelvic tumor I do wish to commit myself, however, to the diagnosis of a metastatic malignant growth in the lung, and I believe that the lesions in the lung were disseminated through the pulmonary artery rather than by other channels

DR TRACY B MALLORY Would you like to see the x-rays?

DR PINCOFFS I should like to very much

DR RICHARD SCHATZKI I know the answer and therefore shall proceed a little carefully This is the first film taken in November I shall confine myself more or less to the hanging up of the films, because the written description covers adequately what is visible on them These are the films taken at the second admission The striking thing, which is probably not quite so obvious in the report, is the preponderance of disease on the right side, particularly in the region of the right upper lobe The bronchial tree is very poorly visible in these films

DR J H MEANS What does Dr Schatzki say about the striking difference in luminosity in the last film?

DR SCHATZKI It is mainly due to the fact that the left side shows fewer lesions than does the right The right upper lobe is more involved, but the whole right lung is extensively infiltrated by the process

DR MEANS Not pneumothorax?

DR SCHATZKI No, there is air in the lung

DR PINCOFFS I shall adhere to my diagnosis of metastatic growths in the lung

DR DONALD S KING When I first saw this patient she was complaining of the very troublesome cough, and the X-Ray Department had made a diagnosis of multiple infarcts and not cancer She had had recurrent phlebitis, and we assumed that this was the source of the pulmonary emboli As the weeks went on there were severe choking attacks and a sense of oppression in the right upper chest in front I was impressed by the fact that the physical signs in the chest were more like those produced by bronchial obstruction than by infarct, but when true phlebitis and thrombosis developed in the leg it became more difficult to maintain the diagnosis of cancer and I finally gave it up In the final x-ray film we focused our attention on the large lesions which had the size, shape and location typical of infarcts and paid too little attention to the miliary lesions In reviewing the films it is evident that these small shadows were present in the first film and had increased in size by the time the last film was taken The x-ray reports as given in this summary are not those which appear in the record but are reinterpretations in the light of the autopsy

CLINICAL DIAGNOSES

Pulmonary infarcts
Phlebitis

DR PINCOFFS'S DIAGNOSIS

Carcinoma of the lung (metastatic)

ANATOMICAL DIAGNOSES

Colloid adenocarcinoma, bronchiogenic, of the lung, with metastases to lung, bronchial nodes, adrenal glands and pericardium
Scirrhous carcinoma of breast
Thrombosis of iliac veins and inferior vena cava
Hydrothorax, bilateral
Hydrohemopericardium
Operative scars drainage of osteomyelitis of left tibia

PATHOLOGICAL DISCUSSION

DR MALLORY Dr Pincoffs's diagnosis is essentially the one we made on this case, at the end of a very puzzling autopsy Later, as you will see we were forced to revise our opinions It was evident as soon as we opened the thorax that the pleural surfaces on both sides were studded with small carcinomatous nodules and that there was extensive cancer throughout the lungs The pericardium was greatly dilated and contained 500 cc turbid fluid, and its surfaces showed diffuse carcinomatous involvement, so I think it is reasonable to suppose that many of the circulatory symptoms might be referable to the marked involvement of the pericardium The heart itself so far as we could make out, was normal It weighed 275 gm The cavities were normal in size, the valves were negative The coronaries showed atheroma The distribution of the tumor nodules diffusely over both pleurae and throughout both lungs looked like metastatic tumor, and an extensive search was made for the primary focus, which till the end of the autopsy seemed fruitless We could find nothing anywhere At

the beginning of the autopsy I had carefully palpated the breasts and felt nothing but on cutting into the left breast from beneath I finally discovered a perfectly characteristic small scirrhous carcinoma about 1.5 cm in diameter The main difficulties with accepting it as the primary source were that the axillary nodes on that side were entirely negative and that it was a relatively small tumor I had already opened up the major bronchi and a good many of the minor ones, thinking of the possibility of primary bronchiogenic carcinoma, without being able to satisfy myself that any of the tumor nodules suggested it. We found a massive phlebitis of both iliac veins and of the inferior 2 cm of the vena cava, but there had been no emboli so far as we could make out. There was one area of infarction in the lung, but the corresponding vessel seemed to be occluded by tumor, not by thrombus, which we thought was due to invasion of the vessel locally rather than to embolism

When the microscopic sections came through, the breast tumor was an undifferentiated scirrhous carcinoma but the tumor in the lungs pericardium and pleurae was a very well differentiated mucoid adenocarcinoma It seemed impossible that such an undifferentiated breast tumor could have given rise to secondary deposits which showed large glands forming abundant mucus So we then went back to the lungs and finally found a bronchus in the right middle lobe which was completely surrounded by tumor Sections through that showed involvement of all layers of the bronchial wall and I think a perfectly characteristic picture of primary adenocarcinoma of the bronchus. Such a tumor can be mucoid in character So our final decision on this case is that the primary disease was bronchiogenic carcinoma and that she also had a second entirely independent and unimportant carcinoma of the breast

DR. SCHATZKI In what lobe was the vessel which was obstructed by tumor?

DR. MALLORY It was in the lower part of the right upper lobe.

DR F DENNETTE ADAMS As a matter of warning against blindly accepting the roentgenologist s opinion in the future, was the triangular mass collapse or tumor?

DR. MALLORY There were two major foci of tumor, one in the middle lobe and one in the upper lobe, the one in the middle lobe being the primary one.

A PHYSICIAN There was no evidence of tumors infiltrating into the blood vessels?

DR. MALLORY I assume there must have been to explain the distribution One does see this distribution, not commonly but infrequently, in the later stages of bronchiogenic carcinoma.

DR SCHATZKI In order to warn you still more, Dr Adams, the man who did the interpretation showed us the films after the outcome was known I think we all fell down flatly on the first films It was not a characteristic picture The last films should have been more suggestive of carcinoma

CASE 25292

PRESENTATION OF CASE

First Admission A fifty-one year-old traveling salesman entered the hospital with the complaint of swelling of the upper half of his body

He had been in the best of health until four years before entry when he developed four or five superficial localized abscesses on his legs and back These finally ruptured and healed completely Seven months later he developed a "Brodie s abscess in the right tibia near the ankle joint which was drained but failed to heal Three years before entry the anterior and part of the lateral cortex of the lower third of the tibia were removed with two sequestrums In spite of this and the use of various kinds of dressings the lesion still continued to drain up to the time of entry Quite suddenly about one month before entry he noticed swelling of his face, neck arms and chest with puffiness of his eyes and dilatation of the veins of his chest down to the costal margins When he lay down the upper part of his body became hot and flushed He also had severe pain on motion in the biceps muscles of his arms He had a slight cough but no dysphagia, and no other pains He was thought to have enlarged mediastinal nodes, and over a period of two and a half weeks was given eight x-ray treatments to the chest. However they failed to improve his condition and the symptoms and signs persisted up to the time of entry Two weeks before entry he developed a boil on the end of his nose which failed to heal During the month before entry he had been easily fatigued and had noticed some weight loss He had had no fever night sweats, chills or any gastrointestinal or genitourinary symptoms

His wife and one child were living and well One child had died of miliary tuberculosis His family history was otherwise negative

Physical examination revealed an apparently healthy well-developed fairly well-nourished man His body appeared to be somewhat flushed and thick set above the waist and definitely paler and thinner below There was fullness of the supraclavicular and infraclavicular fossae and intercostal spaces, with dilated veins on the upper part of the

chest In the recumbent position the upper half of his body became flushed and slightly cyanotic, and the chest and neck veins stood out very prominently The blood pressure in the left arm was 150 systolic, 95 diastolic, and in the right arm 125 systolic, 90 diastolic The trachea was in normal position and no abnormal pulsations could be seen There was questionable increase in mediastinal dullness Breath sounds and tactile and vocal fremitus were somewhat decreased over the upper half of the chest but normal in the lower half The heart was not enlarged, the sounds were normal, and no murmurs could be heard The abdomen was negative A few shotty nodes could be palpated in the inguinal region but none elsewhere On the tip of the nose there was a verrucous, non-tender lesion measuring 1 cm in diameter, with an inflamed base There was a similar lesion over the body of the first dorsal vertebra, and there were healed scars over the sacrum, inguinal region and calf of the left leg which were said to have followed boils Embedded in the calf of the left leg was a very firm, non-tender nodule about 3 by 2 cm which was located just above the scar in that region Over the lower end of the right tibia was an open gutter-type incision, about 15 cm in length, which did not involve the joint It was lined with granulation tissue and was draining foul-smelling material

The temperature was 99°F, the pulse 110, and the respirations 20

The urine had a specific gravity of 1 010 and contained a slight trace of albumin and many bacteria The blood showed a red-cell count of 4,060,000 with 75 per cent hemoglobin, and a white cell count of 11,900 with 86 per cent polymorphonuclears, 5 per cent lymphocytes, 6 per cent monocytes and 2 per cent eosinophils Two blood Hinton tests and a Wassermann test were negative The serum protein was 6 4 gm per 100 cc A blood culture gave no growth and a Frei test was negative The stool examination was negative An electrocardiogram was within normal limits

An x-ray film of the chest showed the diaphragm to be normal in outline It was rather low in position and moved well with respiration There was fine diffuse linear mottling consistent with pulmonary fibrosis No large areas of consolidation were seen, and there were no mediastinal masses The aorta showed an extreme degree of tortuosity which was apparently exaggerated by lateral curvature of the spine It seemed to cross from the left to the right side of the spine at the level of the tenth dorsal vertebra, but it was not dilated and there was no appreciable degree of calcification The heart was normal in size and shape, and the trachea showed no displacement or deformity A plain x-ray film of the abdomen showed no abnormalities, and a film of the nodule embedded in the left calf showed no calcium in it

His condition remained essentially unchanged for the first week On the eighth day it was thought by one observer that the edge of the spleen and several nodes in both axillas had become palpable He was discharged on the nineteenth day, essentially unimproved

Final Admission (six weeks later) Soon after discharge he began to have severe almost constant headaches, which persisted up to the time of re-entry During the two days before re-entry he complained less of the headaches, but his wife noticed that he was mentally disoriented, with a tendency toward euphoria and drowsiness During the interval between entries the swelling of the upper part of his body had greatly diminished

The general physical examination was essentially unchanged except that the edema of the upper part of the body and the dilatation of the veins of the chest had largely disappeared The liver edge was slightly tender and palpable three fingerbreadths below the costal margin He was disoriented and definitely confused There was slight stiffness or flexion of the neck, and suggestively positive Brudzinski and Kernig signs There was slight limitation of forward flexion of the spine, and distinct tenderness to percussion over the dorsolumbar spine from the seventh dorsal vertebra to the sacrum No definite abnormalities of the cranial nerves could be detected, and no paralysis, paresis or loss of sensation was present elsewhere in the body The tendon reflexes were active, the left knee jerk being more active than the right There was a questionably positive Babinski on the left

The temperature was 100°F, the pulse 105, and the respirations 20

The urine, blood and stool examinations were essentially the same as on the first entry A lumbar puncture showed an initial pressure of 425 to 450 mm of water, with normal pulse and respiratory oscillations The spinal fluid was moderately turbid and contained 326 polymorphonuclears, 36 lymphocytes and 74 red cells per cubic millimeter The total protein was 306 mg per 100 cc, the sugar 34 mg and the chlorides 627 mg The gold sol curve was 4455553320, and the spinal-fluid Wassermann test was negative No organisms could be seen on smear or cultured from the fluid

On the third hospital day he became incontinent but during the next two days became more alert although he was still very disoriented and confused A neurological examination on the sixth day showed no marked changes He no longer

complained of headache, but when asked about it admitted he had a little. A lumbar puncture on the ninth day showed an initial pressure of 300 mm., with normal pulse and respiratory oscillations. The spinal fluid contained 46 polymorphonuclears, 210 lymphocytes, 21 large mononuclear cells and 223 red cells per cubic millimeter. The total protein was 300 mg. per 100 cc., the sugar 49 mg., and the chlorides 645 mg. The goldsol curve was 5555555543. During his course in the hospital his temperature ranged from 99.5 and 102°F. He gradually lapsed into a semistuporous condition and died on the nineteenth day.

Differential Diagnosis

Dr. Wyman Richardson: There is no reason to suppose that the abscesses might not have been ordinary furuncles except that the word "abscess" makes one feel that they had been present a long time. We do not know exactly how long. He developed osteomyelitis and one might attempt to relate the osteomyelitis with a localized skin lesion and might possibly consider a staphylococcal pyemia. At any rate he developed osteomyelitis, which drained and failed to heal, and later several other operations were done with the removal of two sequestrums, a sequence which is not at all strange for this type of osteomyelitis. One might reach the conclusion that this patient showed symptoms of an upper mediastinal mass. The surprising thing, however, is that the relevant history applies exclusively to the circulation. There is no Horner's syndrome, no interference with deglutition, and questionable evidence of difficulty in the arterial circulation of the arms. The pain might have been due to muscular anoxia. It might be nerve pain, but the suggestion is that it was arterial in origin. Whoever saw him outside evidently thought he had a mediastinal mass. After reading the present illness one would still be thinking in terms of cancer, possibly of some lymphoid tumor and one might also bring up the thought that, since he had osteomyelitis of long duration, cancer had developed in the sinus. Dr. Edward B. Benedict studied some of these cases but found that they were very chronic and that carcinoma developed only after ten to twenty five years of a constantly draining sinus. This had been going on for only three or four years. We shall leave it at that for the moment — simply pointing out that the only functional disturbance seems to be with the veins and possibly the arteries of the mediastinum. Constrictive pericarditis can, I believe, be eliminated by the absence of evidence of venous obstruction in the lower half of the body.

There is quite a difference here in systolic pressure in the two arms, but my experience in trying to measure pressure on two sides has shown that often one can get quite a difference in the absence of disease.

A verrucous lesion of the nose does not suggest an ordinary boil; does not suggest lupus vulgarus, but one must still think of tuberculosis.

May we see the x-rays?

Dr. George W. Holmes: I cannot add much to what is in the report except to say that I am disturbed about this shadow parallel and lateral to the aorta. It does not seem as if it were directly connected with the aorta. If all he had was a tortuous aorta the curve should be more in that direction. These films were taken in the oblique position in an attempt to bring out the great vessels. He has more tortuosity of the aorta than one would expect in a man of fifty. I do not see anything characteristic in the lungs. The abdominal films do not help. There is no disease of the bone. There is a slight fuzziness of the lung markings throughout the chest.

Dr. Donald S. King: On fluoroscopy they thought that was simply aorta. Dr. Hampton could not find anything else.

Dr. Richardson: The trachea is in the midline?

Dr. Holmes: Yes.

Dr. Richardson: Perhaps we had better go on with the knowledge that there is no definite observable mediastinal mass. If it were a malignant lesion it would seem as if there should be evidence in the x-ray film of distortion of the trachea or of some other lesion to explain the pressure symptoms.

The story on the second admission is that he began to have obvious symptoms of meningitis, — *headaches, disorientation,* drowsiness, — and the only question is how long it had lasted before he came in. I thought this out as being definitely a chronic meningitis and physical examination is consistent with meningitis. The most striking feature of the second admission is that all this upper mediastinal trouble we have been talking about has largely disappeared, and that is difficult to explain. We do not know whether the patient had medication or further x-ray. It seems unlikely that the *x-ray treatment* he had in the beginning was responsible. It is possible that the x-ray treatment caused the melting of some nodes that no longer show on x-ray, but that seems unlikely. He kept getting worse but he had a slight remission in the course of his terminal illness. The second lumbar puncture showed 46 polymorphonuclears, 210 lymphocytes and 21 large mononuclear cells and a sugar of 49 mg. per 100 cc., which is a curious finding.

If we forget about the upper mediastinal situa

tion we are up against the problem of a patient of fifty-one dying with chronic meningitis He had one child who died of miliary tuberculosis I think one perhaps should lead up to a diagnosis of tuberculous meningitis However, it is unusual for a man to die of tuberculous meningitis without having had evidence of miliary tuberculosis, that is, with tuberculous meningitis as the only terminal symptom Furthermore, I get the impression that the length of time that the meningitis had lasted was longer than one would expect There is no evidence of tuberculosis elsewhere, unless the slight fuzziness observed in the x-ray films is evidence of miliary tuberculosis These were taken at the first admission I believe that films taken later might have shown a lesion

Now if we cast about for some other cause of chronic meningitis we are at a loss to know what it could be We consider syphilis and rule it out because of negative blood tests and a negative Wassermann test on the spinal fluid As one wanders about the corridors in this hospital one hears rumors about a patient with a yeast-like infection of the meninges, and as one reads over this case one has an idea that this might be the very patient—I strongly suspect he is I am in a hole because I do not know whether the diagnosis was correct at the time Dr Sumner M Roberts mentioned this yeast-like infection of the spinal fluid, but as one tries to figure causes of chronic meningitis one should think of a yeast-like infection and one looks up the literature of torula meningitis I looked up one article in which 69 patients were reported with this disease I do not know what torula means and I have no knowledge of the types of yeast organisms, but if I tried to believe that diagnosis and forget the first admission it would explain very well the lymphocytes They might well have been yeast-like organisms if the smear was not correctly stained, and in fact such cases might have lymphocytes in the spinal fluid

If we accept that diagnosis, the questions are whether the skin lesions were of the same sort and what was the portal of entry I think one can say that the later skin lesions were due to fungus, accepting this diagnosis for the moment, and one wonders if the original lesions might have been those of a simple furunculosis, and the portal of entry the sinus that drained so long Are the lungs involved and can we account for this edema on the basis of fungous infection in the lung? That is going rather far afield One can imagine an organism's producing a considerable amount of fibrosis that might cause distortion of the softer parts of the mediastinum and possibly interfere with venous return to the heart That seems improbable to me On the other hand, how else could we account for this curious picture, and, finally, why did it disappear? Did he get large amounts of iodide and does iodine have any effect in this condition? I cannot answer these questions Once having entertained the diagnosis of yeast infection it seems to me that it more clearly explains the entire picture than any other diagnosis of which I can think I shall rule out lymphoid disease and Hodgkin's disease, although there is a slight lymphopenia and I may have ruled them out too quickly I shall rule out tuberculous meningitis, and aseptic lymphocytic meningitis I also eliminate since such a diagnosis does not explain the entire picture

Dr King This man was sent in with upper mediastinal obstruction, supposedly from lymphoma He was given x-ray treatment with no effect Dr Hampton could not find anything to account for the obstruction The patient had skin lesions on the nose, also around the osteomyelitic sinus, and it was a biopsy from the skin around the sinus that made the diagnosis It looked exactly like carcinoma and Dr E D Churchill, who saw the skin lesion around the osteomyelitic wound thought it was carcinoma After the diagnosis was made from a biopsy of the skin lesion, Dr Champ Lyons succeeded in growing the organism from the discharge of the osteomyelitic wound

Dr Jacob H Swartz This case was interesting to me because from a dermatological standpoint it was not typical of blastomycosis I saw him in consultation, and I noted then that it might be one of three diseases dermatitis medicamentosa due to bromides or iodides, tuberculosis, possibly the verrucous type, or moniliasis I did not consider blastomycosis because the clinical picture did not fit into any of the three types of cutaneous lesions usually found, that is, the papuloulcerative, the verrucous or the gummatous

The microscopic examination of the tissue was the only means of making a diagnosis The finding of the double-contoured bodies in the giant cells and in the granulomatous tissue ruled out the other possibilities mentioned

I believe it is in place to mention here that at present the view of the majority is that several species, all of which fall into the classification of fungi imperfecti, may produce the clinical picture which is recognized as blastomycosis

Clinical Diagnosis

(Before biopsy report) Lymphoblastoma

DR. RICHARDSON'S DIAGNOSES

Yeast like infection with meningitis and osteomyelitis
Obstruction of superior vena cava

ANATOMICAL DIAGNOSES

Blastomycosis, generalized, with meningitis.
Thrombophlebitis of superior vena cava.
Osteomyelitis, chronic, right tibia
Prostatitis, chronic.
Psoas abscess chronic
Arteriosclerosis, coronary and aortic.

PATHOLOGICAL DISCUSSION

DR. TRACY B MALLORY The postmortem on this patient showed why he had had the upper mediastinal syndrome but did not explain why he recovered from it It looked like a triumph for iodide therapy, but I do not believe it had anything to do with it He had complete thrombosis of the superior vena cava for a distance of 7 cm from the auricle upward The thrombus was apparently just as solid at the time of autopsy as it had been at any previous time. There was no recanalization, and certainly the iodides had not caused resolution of the thrombus He must have developed a collateral circulation, but we were unable to identify it. Blastomyces were found in small numbers in the thrombus They were also found in sections through the indurated area in the calf of the leg which was described, and we found them also in the prostate, which was full of abscesses. The lungs were free, and there was no pulmonary fibrosis

A PHYSICIAN The calf lesion was supposed to have been there for four years Do you suppose blastomyces could have been there all that time?

DR. MALLORY I think it is quite possible.

A PHYSICIAN There are reported cases of blastomycosis in which osteomyelitis appeared two or three years before the involvement of other viscera was recognized

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THE ANNUAL ORATION

THE concluding exercise of the 1939 annual meeting of the Massachusetts Medical Society was an oration delivered by Dr Elliott P Joslin, who is justly recognized as holding a high position among those who have enabled this commonwealth to maintain a prominent position in the history of medical accomplishments in this country The text of his paper appears in this issue of the *Journal*

In this address many of the current social problems interwoven with those pertaining to health, the value of postgraduate instruction, and the importance of health councils and other agencies are presented in dignified and forceful language His attitude with reference to these subjects is in accord with that of other exponents of the duties and responsibilities of the individual doctor and organized medicine, and is a contribution to testimony on record in support of the contention that the profession can and will solve its own problems if not encumbered with restrictive legislation

The latter part of the address is devoted to a discussion of an alleged impending shortage of doctors in Massachusetts with arguments for the adoption of a proposed remedial plan The premise to the argument is, briefly stated, that since there were 376 retirements from the practice of medicine in Massachusetts in 1938 there should be provided an equal number of replacements, but since graduates from Class A medical schools are not coming here in sufficient numbers to fill these vacancies, the deficiency must, for the present, be made up from graduates of schools that have no approved rating Under existing conditions the available resource is to be found, chiefly, among the graduates of Middlesex University School of Medicine who are able to pass the requirements of the Board of Registration in Medicine

In the reference to this school the author of the paper concedes that, as now carried on, it cannot meet the standards adopted by the Committee on Medical Education and Hospitals, and he deplores the fact that Massachusetts has become the "dumping ground" for graduates of unapproved schools Two questions follow What are you as members of the Massachusetts Medical Society going to do about it? What is Middlesex University going to do about it?

As for the Massachusetts Medical Society, having accepted for membership 26 graduates of Middlesex (included in the total of 269 admissions) in the year ending June 8, 1939, it has been fair The only other action by the Society relating to Middlesex concerns various bills on the legislative calendar If Middlesex shows a determination to meet the requirements for an approved school, the sympathy of the Massachusetts Medical Society will be cordial to the highest degree

The hope that Middlesex will answer the second question in a proper way is expressed in the implications of the author's statement "Middlesex University School of Medicine has wonderful opportunities before it, relatively far more, and relatively far more easily attained, than those of Har-

vard, Tufts or Boston University These "opportunities" briefly abstracted from the paper are a reorganization of the Board of Trustees better equipment, more teachers, raising the student fees, more clinical instruction and the addition of $30 000 to the annual budget, made possible hy an endowment fund raised by the alumni, with increasing amounts in subsequent years as needed

These suggestions are sound so far as they go May it not be wise for Middlesex to recognize that the first step in the program should be an appeal to the Council on Medical Education and Hospitals of the American Medical Association and to the Massachusetts Approving Authority, consisting of the secretary of the Board of Registration in Medicine, the commissioner of public health and the commissioner of education, for assistance in this reorganization with the assurance that the advice of the latter organization would be followed? This would mean the elimination of the controlling influence of those with financial interests, if such there be, and the prospect of adequate funds So far, the attitude of Middlesex toward an advisory body has not been encouraging because it has consistently failed to give all the information requested by the state approving authorities As to the financial resources of Middlesex, requests for information at the State House have shown that there are no published statements relating to this subject at the present time.

Examination of the 1939-1940 catalogue of Middlesex University School of Medicine shows that charges to students of medicine for the full four years course amount to about $1769 which multiplied by 304, the number of students, and divided by 4 gives an annual income of nearly $135 000 If the addition of $30,000 to the budget will advance this school to an approved position in medical education the optimism of the proponent of this plan is justified Endorsement of the attitude of Middlesex, however, rests on the decision of the approving authorities One other important question arises, namely the preliminary education of the student body The wretched showing of the graduates of Middlesex before the Board of Registration in Medicine suggests that their premedical training has not adequately prepared them for the study of medicine. If a brilliant and energetic man succeeds in efforts to bring Middlesex up to an accepted standard, his name will stand on the honor roll of those who have contributed a great deal in the field of medical education

Returning to the proposition that Massachusetts should have a yearly replacement of the losses to the number of medical practitioners, an approach to the study of this suggestion from a different angle may be in order, even in the face of the impressive and voluminous array of figures and the ingenious argument submitted by Dr Joslin According to an estimate recently given by the office of the Secretary of State, Massachusetts has a population of 4,350,000 and the last directory of the American Medical Association contains a record of 7528 physicians in the State. This shows that there is one doctor to about six hundred people, whereas one to a thousand is generally regarded as ample to supply adequate service. Even granted that one fourth of the registered doctors are not engaged in active practice, the proportion is still about one to eight hundred If statements occasionally heard tending to show that the income of some doctors is not enough to supply the legitimate requirements for the support and education of their families, the enjoyment of the ordinary luxuries and the accumulation of a reserve for old age or misfortune are true, why increase the number of doctors? Other facts indicate that the demand for doctors services may decline rather than increase because of the improvement in the health of the people and the growing tendency to resort to hospitals where more patients can be treated by a doctor in a given time than is practicable in domiciliary practice.

Taken altogether the general endorsement of the sentiment expressed in the words, better doctors," rather than more doctors," indicates a recognition of the way to advance the average quality of medical care and thereby effectively meet the needs of the people. The facts and arguments presented by Dr Joslin, together with other data and opinions, warrant continued and careful study in order to bring about concerted action which

will be fair to the profession and to the laity These comments are submitted with the hope that there will be in the near future a symposium on the subjects herein considered

GRADUATE EDUCATION

There can be no question but that the recent growth and development in the art and science of medicine requires that practicing physicians keep abreast of the times We must all be intellectually fit In a recent discussion of graduate education in medicine, Abell* calls attention to the increasing need for graduate teaching, which he properly divides into two categories the one dealing with the preparation and training of specialists, the other concerned with the continued education of those already in active general practice

This is an age of specialization and the trend in this direction may well have gone too far Many believe that it has It seems certain, in any event, that entirely adequate means are already at hand to train, through the medium of postgraduate residencies, men properly equipped with an advanced and detailed knowledge of some particular field in medicine We need have no fear of the lack of specialists We may possibly view with some apprehension their increasing number

The more difficult problem is that of aiding the doctor who earnestly desires to add to his medical knowledge and improve his skill as a general practitioner among his fellow men

It is often assumed that this burden rests entirely on the shoulders of organized medicine Abell suggests that intramural courses, consisting of bedside lectures, be given by medical schools and connected hospitals or that demonstrations and clinical expositions covering topics which the physician meets in his daily work be offered under the auspices of the various county societies The implication appears to be that if such courses are offered, they will be taken to full advantage and with much enthusiasm by the practicing physician, be he urban or rural This in many instances proves to be the case as is shown by the attendance at the various postgraduate meetings held throughout the country Yet in other instances the reverse is unquestionably true Instructor physicians of note and ability have been prepared in advance for an audience of a hundred or more and been met by the local chairman, three undergraduate students with an eye to adventure and four graduates whose interest was slight and whose attention was nil

The proper and adequate preparation of a graduate course in medicine — whether it be in the form of didactic lectures or bedside clinics — is at best difficult No instructor, however experienced, can go forth unprepared and serve up an intellectual menu which is both palatable and nourishing Time and thought and energy and patience must be expended if graduate instruction is to bear fruit On the other hand, the physicians for whom the instruction is planned must have a sincere desire to learn and a great willingness to cooperate in any projected program

The medical profession has, in a sense, assumed a moral obligation to supply opportunities for the acquisition of further knowledge to those who seek it Let it shoulder this obligation squarely and sanely But the practicing physician who would take advantage of this graduate education in medicine — be he old or be he young — must likewise do his share or the seed falls on barren ground The obligation to teach is no greater than the necessity of keeping intellectually fit

MASSACHUSETTS MEDICAL SOCIETY

SECTION OF OBSTETRICS AND GYNECOLOGY*

RAYMOND S TITUS, M D, *Secretary*
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Boston

ACUTE INVERSION OF THE UTERUS ASSOCIATED WITH PLACENTA ACCRETA

Mrs M D., a twenty-six-year-old para II, was delivered at home on February 23, 1927, and transferred to the hospital because after five hours the placenta had not been delivered

*A series of selected case histories by members of the section will be published weekly Comments and questions by subscribers are solicited and will be discussed by members of the section

The family history was negative, as was the past istory Catamenia began at thirteen, were reg lar with a twenty-eight-day cycle and lasted four ays without pain Her previous pregnancy had esulted in a normal delivery in 1926 Her last eriod was May 8, 1926, making the expected date f confinement February 15 The prenatal course ad been normal.

Following delivery at home, the patient s pulse as 130 On entry it was 145 The blood pressure as practically unobtainable. The patient was rossmatched with her husband for possible trans- asion and the husband was found to be com atible. Manipulation of the uterus and the in ction of posterior pituitary extract did not re ult in the delivery of the placenta, consequently ie uterus was invaded Under nitrous oxide and xygen anesthesia and strict asepsis the cervix was ouad readily dilatable, the placenta was attached) the left anterolateral wall of the uterus A line f cleavage was found, and the placenta slowly eparated As it was withdrawn from the birth anal, the fundus immediately followed Pieces f placental tissue and membrane were still at ached to the fundus, these were removed with auze and a curet The fundus was readily eplaced in the abdominal cavity and was packed ith six yards of sterile gauze. At the end of the peration the patient was in deep shock the blood ressure barely obtainable, and the pulse rapid nd just perceptible. Three hundred and fifty ubic centimeters of citrated blood from her hus- and was given, and within a very short time ie blood pressure was 90 systolic, 60 diastolic, nd the pulse came down to 120 The uterine ack was removed the following day, and there as no further bleeding No blood studies were ade. The patient had an uneventful convales- ence. A pathological examination disclosed a lacenta accreta

Comment This is a very interesting combina on — a partial placenta accreta and acute inver on of the uterus. Furthermore it shows that par al accretas may be treated without hysterectomy : is quite remarkable too that the trauma associ ted with the removal of the placenta and the urettage of the exposed placental sinuses followed) gauze packing did not result in infection The alue of transfusion is again emphasized

This inversion was undoubtedly closely asso- iated with the accreta The removal of the pla enta, part of which was firmly adherent to the terine wall, caused the uterus to turn inside out s the placenta was being delivered

MISCELLANY

TUBERCULOSIS CASE-FINDING IN PUBLIC SCHOOLS

An advisory committee on tuberculosis of the Medi cal Society of New Jersey has drafted a statement of principles and standards regarding tuberculosis case finding among pupils in public schools. This carefully drafted statement (Tuberculosis Case Finding in Public Schools. J M Soc New Jersey 36 109–111 1939) repre senting the views of one organized body of physicians should be helpful to all physicians as the practice of case finding in schools is growing in popularity Space pro- hibits reprinting the report in full — some passages have been abbreviated, others omitted.

1 QUESTION How valid is the tuberculin test? May we assure parents that the positive or the negative reac tion is absolutely correct?

ANSWER. The tuberculin test is one of the most reliable tests that we have for determining whether or not tuber cl bacilli have at some time entered the body If posi tive, it does not necessarily indicate the presence of tu berculosis the degree of infection, or the extent of dam- age done if any

For all practical purposes, exceptions to this statement may be ignored. They should not cause worry to parents.

2. QUESTION Which grades should be tested?

ANSWER. The ideal plan would be to test children of all grades and ages.

First Grade Pupils In this group one is likely to find so small a number of infections as hardly to make the ef fort worth while on a very large scale. On the other hand, experience has shown that very young children with positive tuberculin reactions will serve as leads to a large number of open cases of tuberculosis that are active sources of infection

Kindergarten The same may be said of this group

High School The high-school age is receiving special attention for several reasons. First, because of the high morbidity and mortality rate known to exist between the ages of fifteen and twenty-five. Secondly because in the average high school a large percentage of this important age group is available under ideally controlled conditions. More cases of tuberculous infections are likely to be found in this age than in the lower grades.

3 QUESTION When is re testing advisable?

ANSWER. All tuberculin-negative students should be re tested at least once a year All tuberculin positive students should be re x-rayed at least once a year unless some thing abnormal is found when the frequency of re x-raying will depend upon the particular circumstances in each case.

4 QUESTION Is the Mantoux test so definitely su perior to other tests that the question of choice may be ignored?

ANSWER. The Mantoux test is definitely superior to other tests because it is twice as sensitive as the scratch test of von Pirquet it is an exact quantitative test the response when positive is more definite and more prompt than it is in all other tests.

However as a second choice especially in the face of objection to the "needle," the patch test may be used. The following are the objections to the patch test it must be kept dry it must not be interfered with by the child

frequently when examined at the end of forty-eight hours, it may be negative, and require four days for a reading, under the best of circumstances it is at least 5 per cent less reliable than the Mantoux test, the greater cost of each test would also become a financial problem if planned for a large number

5 QUESTION What is the significance of different degrees of reaction?

ANSWER. Different degrees of reaction have no significance beyond the fact that they indicate different degrees of sensitivity This has no bearing on the question of the amount of infection or disease, and need not concern school administrators or even school physicians It it better not to confuse the minds of parents with any attempts to interpret degrees of reaction

6 QUESTION Should all positive reactors be x rayed? Are there indications to warrant x raying of negative reactors?

ANSWER All positive reactors should, without exception, be x rayed

With reference to negative reactors, an x ray is not necessary to exclude tuberculosis, but it is frequently advisable for certain special reasons, such as malnutrition, suspicion of heart disease, chest deformity, or recent non tuberculous lung infections such as pneumonia, or the presence of symptoms of chronic bronchitis or pulmonary disease of non tuberculous character

7 QUESTION Is paper x ray film accurate?

ANSWER Although paper films have certain limitations, they are quite satisfactory in the 'sifting' process or screening out of abnormalities

8 QUESTION Is the celluloid film infallible?

ANSWER. No There are lesions in the lung so small and so translucent to the ray that they may not be demonstrable in any films

9 QUESTION Assuming a positive reaction to the Mantoux test, and a negative reading of a paper film, what should be told parents?

ANSWER. A positive Mantoux reaction, by itself, does not indicate that a person has tuberculosis If the tuberculin test is positive (red and swollen), it means only that tuberculosis germs have at some time entered the body It does not tell how many there are, or if any damage has been done. It should not cause worry to parents

'If the test is positive, the child's chest should be x rayed to be certain that no harm is being done in the lungs An x ray examination should also be made of every member of the household to learn if the child is being exposed to an open case of tuberculosis Frequently this may reveal other cases of tuberculosis before the victim is at all aware of the disease If no one in the family has the disease, search should be made among the child s playmates or others with whom he comes in close contact. It is perfectly safe for a child with a positive reaction to mingle with other children — for unless there are tubercle bacilli in his sputum, he cannot pass them to others Tuberculosis often exists in a concealed form in unsuspecting persons, and it is important to make the discovery in order to prevent further spread of the disease.'

The parents should also be advised that the tuberculin-positive student should be x rayed regularly at least once a year so as to detect any evidence of reinfection as early as possible If the tuberculin test is negative, no x-ra are necessary until a subsequent tuberculin test proves be positive.

10 QUESTION Will you outline briefly the follow procedure for the average school district?

ANSWER After a tuberculosis survey, the parents a advised in a general way as to the results, and instruct to see their family physician for further explanation the same.

Parents receiving reports to the effect that the Manto test was negative are advised of the importance of havi the children re-tested annually by their own doctor, long as they are negative.

In the case of the child who had a positive Manto with a negative x-ray, the parents are advised to have t child x rayed at least once a year thereafter through th own physician. They are also advised to have all oth members of the household x-rayed, and all children und fifteen Mantoux tested

In the case of those children in whom the x r showed some abnormality, the parents are particula urged to take the report of the findings to their fam physician at once. He is to be further informed of t desirability of communicating personally with those co ducting the survey, who should endeavor to co-oper with him to the fullest extent on behalf of his patie For those who cannot afford private service, the facilit of the tuberculosis clinics should be made available.

With reference to the schools, plans are formulat for continuing these surveys so as to test all new adm sions each spring, as well as those previously tubercu negative.

It is advised that no child should be excluded fr school until x-ray study reveals findings that would w rant it and no type of active case, communicable or n should remain in school — all active cases require tre ment. — Reprinted from *Tuberculosis Abstracts* (Ju 1939)

NOTES

Sir Thomas Lewis, physician to the University Colle Hospital, London, England, has been appointed to t annual Edward K. Dunham Lectureship for the Pron tion of the Medical Sciences in the Harvard Medi School for the coming academic year, the university cently announced. Sir Thomas is one of the world s lea ing authorities on diseases of the heart. The lecturesh is intended "to bind closer the bonds of fellowship a understanding between students and investigators in t and foreign countries" The lecturers are drawn chie from among the leaders of foreign medical research by committee at the Harvard Medical School.

Middlesex University School of Medicine announces t appointment of Dr Theodore Fischer Galati as profess of ophthalmology Born in Roumania, Dr Fischer-Gal received his medical degree from the University of Vien and then studied at the University of Rome. He eventual became a member of the medical faculty of the Unive sity of Rome, serving from 1929 to 1938 as professor ophthalmology On his return to Roumania he was dec rated for his scientific accomplishments and was ma chief of the ophthalmological service at the Polyclin Hospital of Bucharest. For the past few months, D Fischer-Galati has been engaged in research under t sponsorship of the Mexican government.

IOTICES

EMOVALS

JOHN DENOVIAN M.D announces the removal of his fice from 35 Poplar Street, Belmont, to 16 Trapelo Road, elmont.

SAMUEL H. EPSTEIN, M.D announces the removal of is office from 475 Commonwealth Avenue to 370 Commonwealth Avenue, Boston.

OCIETY MEETINGS AND CONFERENCES

ALENDAR OF BOSTON DISTRICT FOR THE WEEK BEGINNING ONDAY, JULY 24

UESDAY JULY 25
10 a. m. 12:30 p. m. Boston Dispensary tumor clinic.

HURSDAY JULY 28
10 a. m. 12:30 p. m. *Boston Dispensary tumor clinic*

RIDAY JULY 29
10 a. m. 12 m. Staff rounds of the Peter Bent Brigham Hospital. Conducted by Dr Marshall N F lton.

*Open to the medical profession.

AUGUST 30 SEPTEMBER 2 — Seminar in Physical Therapy Page 857 ue of May 18.

SEPTEMBER — Boston Psychoanalytic Institute. P ge 450 issue of Septem r 22, 1938.

SEPTEMBER 4-6 — Institute for the Coordination of the Blood and Blood-rming Organs. Page 941 issue of J ne 1

SEPTEMBER 5-8 — American Congress of Physical Therapy Page 857 issue May 18.

SEPTEMBER 11 15 — American Congress on Obstetric and Gynecology ge 938, issue of December 8

SEPTEMBER 14-16 — Biological Photographic Association. Page 941 issue June 1.

SEPTEMBER 25-28 — Pan-Pacific Surgical Association Page 863 issue of ptember 24

OCTOBER 23 NOVEMBER 3 — New York Academy of Medicine. Page 977 ue of June 8.

FALL, 1939 — Temperature Symposium. Page 218, issue of February 2

DECEMBER 2 — American Board of Obstetrics nd Gynecology Page 1019 ue of June 15

MAY 14 1940 — Pharmacopoeial Convention. P ge 894 issue of May 25.

JUNE 7 8 and 9 1940 — American Board of Obstetrics and Gynecology ge 1019 issue of June 15

OOK REVIEWS

he Wisdom of the Body Walter B Cannon. 333 pp New York W W Norton & Co Inc., 1939 $3 50

The entire medical profession and many non-professional roups will have added reason to be grateful to Professor Valter B. Cannon for the appearance of a second revised nd enlarged edition of *The Wisdom of the Body* Dur ng the seven years since the first edition, additional re earches have brought forth new facts and developments n the realm of bodily stabilization which have been ncorporated in this new edition. Also a new chapter has een added on the effects of age on homeostatic mecha nisms.

The purpose of the book, as stated by the author in the ntroduction is 'to consider first what may be regarded s the fundamental condition of stability then the various hysiological arrangements which serve to restore the nor mal state when it has been disturbed and finally the arrowing limits of adaptation imposed by age" The levelopment of these thoughts brings new meaning to he Hippocratic concept of the *vis medicatrix naturae* to Claude Bernard's *milieu interne* and to Cannon's *equilibria* nd *homeostasis*

The wisdom of the body is defended by presenting the reader with an inductive unfolding of the methods employed in preserving the homeostasis of blood sugar of blood proteins, of blood fat of blood calcium and of neutrality in the blood. Evidence is further gathered by a consideration of the constancy of the water and salt content of the blood the maintenance of the constancy of body temperature thirst and hunger as means of assuring supplies the maintenance of an adequate oxygen supply Other chapters are titled "Natural Defenses of the Or ganism" "The General Functions of the Nervous Sys tem, "The Role of the Sympatho-Adrenal System in Homeostasis" The General Features of Bodily Stabiliza tion" and "The Relations of Biological and Social Hom eostasis The bibliography consists of a list of publica tions from the Physiological Laboratory of Harvard Uni versity on which the present account is based

The critical reader will be stimulated by the questions which Professor Cannon raises as problems for future investigation. The following examples may be cited. On page 75, one reads "The explanation therefore of this peculiar behavior of the stomach which originates the pangs of hunger remains to be discovered." Again on page 87 it is stated "Just how water is released from storage as it is needed to keep constant the state of the blood is not as yet fully explained — indeed the same statement may be made regarding its deposit in the reser voirs and its retention there." On page 181 the author writes "For the present the control of the internal secre tion of the thyroid must be left for further research" Finally in discussing the regulation of supplies of both protein and fat, we read "The importance of securing further knowledge of the ways in which the primary sub stances are laid by and later mobilized for use is unques tioned. But for such knowledge we must await the progress of patient research."

This book excels in clarity of expression in easy read ableness and in strict adherence to fact, for which reasons it will continue to be regarded as a necessary addition to every library lay or professional.

Handbook of Practical Bacteriology A guide to bacterio logical laboratory work T J Mackie and J E. McCartney Fifth edition. 586 pp. Baltimore Wil liam Wood & Co., 1938 $4 00

This compendium of the fundamental data of bacterio logical and immunological knowledge in so far as it re lates to organisms causing disease has been published in five editions within a period of fourteen years This is clear evidence that the book fills a definite need on the part of a fairly large group Since only the elements are pre sented and these in the most succinct manner possible this group in all probability is composed largely of novitiates and those, such as technicians who may require a sim ple and perspicuous account of the manner in which the most important parasitic agents of man may be identified and studied in the laboratory

The book is divided into three principal parts. The first deals with the classification and physiology of micro organisms and the principles of immunology in so far as they have a practical application. Then follow chapters which present tersely but with sufficient specific detail to make all the procedures clear and thus easily to be car ried out in the laboratory by the beginner specific in struction in such essential matters as the preparation of the standard varieties of culture media for bacteria, the technics of animal experimentation as related to the study of living pathogenic bacteria the details of practical im-

munological and serological tests commonly used in diagnosis, and finally an exposition of the methods employed in the bacteriological study of milk and water, testing of antiseptics and other useful matter of a similar nature. The third section compresses in a surprisingly small space the most important data concerning the majority of bacteria pathogenic for man by which they may be quickly recognized and upon which specific methods of prophylaxis and therapy are based. Included here as well are brief accounts of some of the pathogenic fungi and protozoa, together with a chapter on the filterable viruses

In the opinion of this reviewer the authors have been unusually successful in their intent to present a simple and accurate outline of practical bacteriology Particularly to be recommended is the section on culture media to which the authors have given considerable space. The exclusion of all but a handful of references to the literature is to be regretted, but it is obvious that recently reported advances pertinent to the subject have been incorporated.

The Journals of Bronson Alcott Selected and edited by Odell Shepard 558 pp Boston Little, Brown & Co, 1938 $5 00

Most of Bronson Alcott's contemporaries seem to have regarded him as a 'man ineffectually good, mild, vague and somewhat absurd," and most critics since, largely accepting this verdict, have been willing to allow his name to pass into oblivion. Yet directly or indirectly Alcott was not without a considerable influence in his day Emerson valued his friendship and opinions, called him, indeed, 'the most extraordinary man and the highest genius of the time." Thoreau said he was "the sanest man' he had ever known, and Hawthorne, Frederick Hedge, and William T Harris all ranked him high among philosophers More than any other man "he spread the culture of New England in the new Middle West," and he was the "one complete representative of American transcendentalism.

The writings of a man who touched upon life at so many points must of necessity be of interest to students and historians, and they must be grateful to Shepard for these well selected extracts from voluminous and hitherto unpublished journals. The casual reader, on the other hand, is not likely to be much intrigued. Alcott never intended these writings for publication, and truth to tell, he did not write so well as perhaps he ought to have written. For general interest Alcott's own remarks do not compare with Shepard's comments about him. Indeed, Shepard writes beautifully, as witness his life of Alcott, *Pedlar's Progress,* the Pulitzer prize winner for 1938 One who purposes to read these journals would do well to read the biography first that is what your reviewer did

If one were to be asked what especial interest Alcott's journals have for the medical man, the answer would be, 'None.' There is an occasional mention of this or that medical author whose writings Alcott had read or tried to read, but he did not have the scientific eye, he read only for what he might appropriate to metaphysics If the physician, not as a doctor but as a man, happens to be fond of history and happens as well to love a beautifully made book, there is something here for him.

Superfluous Hair and Its Removal A F Niemoeller 155 pp New York Harvest House, 1938 $2.00

Superfluous hair" is not likely to appear in a death certificate as the immediate cause of death Nor is it apt to cause physical pain or obvious disability, however, depending upon its character, size, color and distribution it may become a serious handicap to the individual who is so afflicted Thus, the author introduces the problem H claims no definite knowledge of the etiology, but is inclined to believe that it may result from some disturbance in the endocrine system

As regards treatment or the methods of removing superfluous hair, he sets up three standards safety, painlessness and permanence. In the light of these standards he analyzes the popular methods and points out the weaknesses in each

Concerning the various chemicals or lotions there is the following general statement "There is no known drug paste, lotion or application of any sort that may be applied to the skin and affect a permanent removal of hair" X-ray and radium therapy he treats with strong condemnation Electrolysis seems to be his method of choice, and he devotes some fifteen pages to it. (The reviewer doubts the advisability of using the multiple needle method) Surgical diathermy runs a close second and is given considerable attention. Shaving gives no permanent relief but as a rule is a safe method, and because of its general use, particularly by men under normal circumstances, his discussion of this subject is of interest Abrasives, bleaching, tweezing and other less important methods are also discussed.

This is claimed to be the first book on the subject, and its author may be congratulated on making a valuable contribution

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Personal and Community Health C E Turner Fifth edition 652 pp St. Louis C V Mosby Co, 1938 $3 00

The proper presentation of hygiene and public health to the college student offers considerable difficulty The average student is not particularly interested in many aspects of the problem, and it is extremely easy to give undue weight to certain phases and omit or curtail others Professor Turner has compiled a book for college students that avoids these pitfalls He covers a large field in a comparatively short presentation of well-chosen words The book is sound, and the fact that it has gone through five editions and is the standard textbook for a large number of colleges testifies to its worth Anybody desirous of getting a bird's-eye view of a subject that needs volumes for detailed explanation will do well to read this book.

The references at the end of each chapter are particularly helpful for those wishing to do more extensive reading

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Schafer's Essentials of Histology Descriptive and practical for the use of students H. M. Carleton 618 pp Philadelphia Lea & Febiger, 1938 $5 00

The present edition, which is edited by H W Carleton, carries on the tradition of a good textbook. The general character of the book, as originally prepared by Sharpey Schafer, has been retained yet the text has been admirably brought up to date. The physiological point of view is adequately considered. An important innovation is the use of photographs without any reduction in size in order to obtain the maximum of detail. Reading this book is like meeting an old friend, and it is highly recommended to students and practitioners as an excellent, practical statement and exposition of the microscopic structure of the body

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THE EFFECT OF SURGICAL OPERATIONS ON THE LEVEL OF CEVITAMIC ACID IN THE BLOOD PLASMA*

CHARLES C LUND M.D †

BOSTON

IN THE fall of 1937 an extensive study of cevitamic acid in relation to the healing of surgical wounds was started It is expected that reports on other phases of this work will be published shortly Early in the work it was seen that if blood specimens for cevitamic acid determinations were taken shortly after operation extremely low values in the blood were the rule. It was therefore decided to study the effect of surgical procedures on the blood level of this vitamin intensively by determining the level before and several times after operations on many patients. No conclusive studies of exactly this nature have been found in a careful search of the literature, but there are four papers which deal in some fashion with the subject, and a fifth that has a direct bearing on it but contains only fragmentary data

In 1937 Lauber, Bersin and Nafziger[1] found that the urinary output of ascorbic acid in healthy rabbits was increased after general or local anesthesia and after operations They concluded that these findings pointed out the importance of maintaining or establishing a vitamin C reserve before an operation Later in 1937, Lauber[2] studied the same subject in rabbits injected with excessive doses of 100 mg of cevitamic acid daily until their urinary excretion reached a constant level In these animals, after anesthesia with ether, chloroform or ethyl chloride, the output of the acid sank very low for one day but promptly rose again However, after Evipal anesthesia the rise was delayed and the level of excretion remained low for several days Lauber also noted diminished excretion after operation and after experimental infection in rabbits At the same time Geissendörfer[3] reported that a patient with a colloid goiter was prepared for operation by the administration of 100 mg of cevitamic acid daily until the excretion became constant at 20 mg per day The day after the operation the output rose above 50 mg , it fell gradually during the following week Another patient with hyperthyroidism treated in the same way, showed an excretion of less than 10 mg daily before operation, and for five days after operation the excretion was exceedingly low but rose there after to more normal values It should be borne in mind that the tissue demands for vitamin C are increased in hyperthyroidism In 1938 Griebel[4] studied the problem of vitamin C balance by means of the administration of large doses of cevitamic acid He found a negative balance after operation as well as in febrile diseases, indicating to him that in both cases there was an increased demand for the vitamin As these results are seemingly contradictory no conclusions can be drawn except that anesthesia and operation, both in animals and in human beings, may either increase or decrease the urinary output of the vitamin

TABLE 1 *Effect of Operation on Serum Ascorbic Acid* *

OPERATION	SERUM ASCORBIC ACID			
	PREOPERATIVELY		POSTOPERATIVELY	
	Avg.	Max.	Min.	Avg.
	mg. per liter	mg. per liter	mg. per liter	mg. per liter
Appendectomy	5.85	9.40	3.29	4.70
Cholecystectomy	8.55	15.50	3.29	3.29

Extract from Bazzocchi's "Table 2."

Bazzocchi[5] in 1936 studied the serum ascorbic acid levels in surgical patients before and after operation He used a trichloracetic precipitation method for his determinations The end point was determined by the amount of decolorizing of methylene blue that took place on ten minutes exposure to sunlight. It is possible that this is not a very accurate method, but the results were reasonable. Bazzocchi found serum values rang

From the Department of Surgery Harvard Medical School, and the Fifth Surgical Service and Surgical Research Laboratories, Boston City Hospital. This work was aided by grants from the Wellington Fund Harvard Medical School and from an anonymous donor Assistance accepting the dai nd in preparing hi m terial wa furnished by the personnel of the Works Progress Administ tion (Projects 14667 nd 1-3540)

†Assistant professor of surgery Harvard Medical School; assistant in surgery, Boston City Hospital.

mg from 1.55 to 0.14 mg per 100 cc. in miscellaneous surgical patients, the average value was 0.56 mg. He stated that after operation the values tended to diminish. The data on which this statement was based are not presented in tables of individual cases, but only as shown in Table 1. Unfortunately this table, like all other information in Bazzocchi's paper, indicates neither the number of cases studied, the number of determinations per case either before or after operation nor the length of time the studies were carried out before or after operation.

This report contains much more information concerning the effect of operation on the urinary ascorbic acid values than do other papers. Unfortunately it is presented in the same obscure fashion as are the serum data. However, Bazzocchi made the following conclusions:

> In surgical patients the amount of vitamin C excreted in the urine varies within rather wide limits. It is less than normal, for example, in gastroduodenal ulcer and in adhesive syndromes of the right abdomen, but higher than normal in intestinal occlusions and in surgical affections of the kidney. In Basedow's disease the amount excreted is high, but falls below normal after thyroidectomy.
>
> In the postoperative period, the values tend to approach normal. After cholecystectomy there is a sudden diminution of elimination.
>
> If determinations are carried out immediately before and after intervention, taking into account the different types of anesthesia, a diminution is as a rule observed after ether narcosis and after peridural and local anesthesia, but an increase after evipan anesthesia.
>
> Ascorbic acid is present in the serum of surgical patients in the proportion of 5.60 mg. per liter on an average. As a rule the amounts found have been smaller than those in the urine.

METHODS

No studies were made by us on the urine. It has been shown by many authors that appreciable urinary secretion of the acid takes place only when excess amounts are fed to a saturated patient and that many patients are not saturated. Blood specimens were taken in the early morning and determinations on the plasma were made by a modification of the Farmer and Abt[6] method. The details of our technic and possible explanations of our rather low average figures will be considered in another paper. Whenever possible two or more determinations were made before operation and several after operation. In order to keep the study free from the complicating factor of the effect of high fever on the metabolism of the acid, all cases that developed pneumonia or other infections were eliminated from the series. None of the patients tabulated were given cevitamic acid treatments before the last determination.

RESULTS

The cases studied have been divided into four groups according to the preoperative level of the plasma cevitamic acid. The first group consists of cases in which the levels may be considered to be normal (at least 0.8 mg. per 100 cc. of plasma). In the second group the levels are generally considered to be low normal (0.5 to 0.8 mg. per 100 cc.), these levels are below those of fully saturated patients, but no harm is known to result from the maintenance of such levels. The third group is made up of patients with levels (0.2 to 0.5 mg. per 100 cc.) which are supposed to result in symptoms of chronic scurvy if maintained. In the fourth group the levels were less than 0.2 mg. per 100 cc., if the blood remains below this level for a few weeks some or all such patients develop active scurvy.

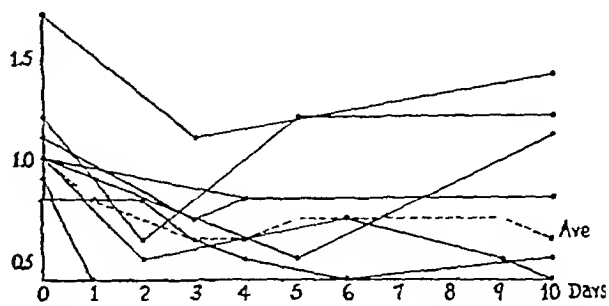

CHART 1. *Effect of Operation on Blood Plasma Cevitamic Acid Level.*

Nine cases with initial levels at 0.8 mg. per 100 cc. or higher.

In the tables the bold-face figures are actual determinations, while the others are interpolations. These interpolations are inserted for one reason only, namely to allow the calculation of relatively significant averages. It was manifestly impossible to take daily blood specimens, and yet without daily figures the averages resulting from each day's figures would jump about so much as to be value less

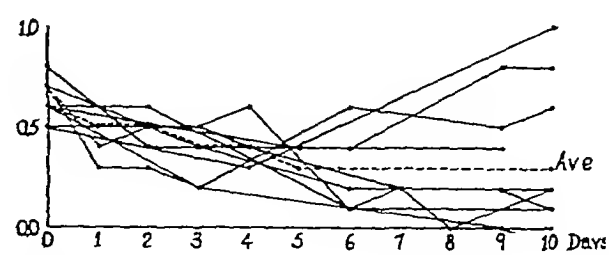

CHART 2. *Effect of Operation on Blood Plasma Cevitamic Acid Level.*

Ten cases with initial levels between 0.5 and 0.8 mg. per 100 cc.

Chart 1 and Table 2 show that in patients with normal preoperative levels the vitamin level was reduced postoperatively about 30 per cent on the average and not over 50 per ceot in any individual case within three days after operation, and that only occasionally was there a tendency for it to only slightly above those which might have re sulted io scurvy if maiotained loog enough The very low origioal level either persisted or dropped still furtber However, in 4 cases there was a late rise to a level equal to or higher than the origioal

Chart 4 and Table 5 show the results in the

TABLE 2. *Effect of Operation on Blood Plasma Cevitamic Acid Level (9 Cases with Preoperative Levels of 0.8 mg per 100 cc or Over)*

Case No.	Operation	Month	Preoperative level	Plasma Cevitamic Acid Levels: Postoperative (days) 1	2	3	4	5	6	7	8	9	10	Anesthesia
			mg	mg	mg	mg	mg	mg	mg	mg	mg	mg	mg	
1	Excision of sinus tract	May	1.7	1.5	1.3	1.1	1.1	1.2	1.2	1.3	1.3	1.4	1.4	Nitrous oxide and ether
2	Appendectomy	March	1.2	0.9	0.6	0.8	1.0	1.2	1.2	1.2	1.2	1...	1.2	Spinal
3	Cholecystectomy	December	1.1	1.0	0.8	0.7	0.8	0.8	0.8	0.8	0.8	1.1	1.1	Nitrous oxide and ether
4	Exploratory laparotomy; normal pregnancy	March	1.0	0.8	0.5	0.6	0.6	0.7	0.7	0.6	0.5	0.5	0.4	Spinal
5	Cholecystectomy with drainage	May	1.0	0.9	0.8	0.7	0.6	0.5	0.5	0.5	0.5	0.6	0.6	Nitrous oxide and ether
6	Appendectomy excision; ovarian cyst (right)	December	1.0	0.8	0.7	0.6	0.5	0.5	0.4	0.5	0.5	0.5	0.5	Spinal, and nitrous oxide and ether
7	Appendectomy	March	1.0	0.9	0.9	0.9	0.8	0.8	0.8	0.8	0.8	0.8	0.8	Spinal
8	Cholecystectomy	April	0.9	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.5	0.5	0.5	Nitrous oxide and ether
9	Cholecystectomy	December	0.8	0.8	0.8	0.6	0.6	0.6	0.6	0.6	0.7	0.7	0.8	Nitrous oxide and ether
	Average		1.0	0.8	0.7	0.6	0.6	0.7	0.7	0.7	0.7	0.7	0.6	
	Maximum		1..	1.5	1.3	1.1	1.1	1.2	1.2	1.3	1.3	1.4	1.4	
	Minimum		0.8	0.4	0.5	0.4	0.4	0.4	0.4	0.4	0.5	0.5	0.5	

return to its former level during the follow-up period In none of these cases were any postopera tive values of less than 0.4 mg per 100 cc fouod

Chart 2 and Table 3 give the data on the cases that showed suboptimal but not extremely low values at the start. These cases on the average dropped 50 per cent, and several patients showed a loss of nearly all the vitamin from the blood Only 3 cases showed any tendency for the level to rise after it had gone down These data show that when the preoperative blood level is originally large group of cases in which the preoperative values were at the scurvy level That means that these patients probably had very little tissue re serve which kept them from actual clinical scurvy The original levels were so low that there could be no appreciable drop In only 2 cases was there a late rise in the plasma level

DISCUSSION

It is seen from the tables that when the plasma cevitamic acid level is above minimal values a

TABLE 3. *Effect of Operation on Blood Plasma Cevitamic Acid Level (10 Cases with Preoperative Levels of 0.5 to 0.8 mg per 100 cc)*

Case No.	Operation	Month	Preoperative level	Plasma Cevitamic Acid Levels: Postoperative (days) 1	2	3	4	5	6	7	8	9	10	Anesthesia
			mg	mg	mg	mg	mg	mg	mg	mg	mg	mg	mg	
1	Hemorrhoidectomy	April	0.8	0.6	0.4	0.4	0.4	0.4	0.4	0.5	0.6	0.8	0.8	Spinal
2	Appendectomy	December	0.7	0.4	0.5	0.5	0.6	0.4	0.1	0.2	0.2	0.2	0.1	Spinal
3	Cholecystectomy	April	0.7	0.6	0.5	0.4	0.3	0.3	0.2	0.2	0.2	0.2	0.2	Spinal
4	Cholecystectomy; choledochostomy	January	0.7	0.3	0.3	0.2	0.4	0.5	0.6	0.6	0.6	0.5	0.6	Nitrous oxide and ether
5	Exploratory biopsy duodenal ulcer	April	0.6	0.5	0.3	0.2	0.1	0.1	0.1	0.1	0.0	0.0	0.0	Nitrous oxide and ether
6	Lysis of adhesions; resection of posterior jejunum	January	0.6	0.6	0.6	0.5	0.4	0.2	0.1	0.1	0.1	0.1	0.1	Nitrous oxide and ether
7	Cholecystectomy	December	0.6	0.6	0.7	0.3	0.4	0.3	0.3	0.2	0.0	0.1	0.2	Nitrous oxide and ether
8	Appendectomy	March	0.6	0.5	0.5	0.5	0.4	0.4	0.4	0.4	0.4	0.4		Spinal
9	Hemorrhoidectomy	May	0.5	0.5	0.4	0.4	0.3	0.4	0.5	0.7	0.8	0.9	1.0	Spinal
10	Appendectomy	March	0.5	0.5	0.5	0.5	0.4	0.3	0.2	0.2	0.2	0.2	0.2	Nitrous oxide and ether
	Average		0.6	0.5	0.5	0.4	0.4	0.3	0.3	0.3	0.3	0.3	0.4	
	Maximum		0.8	0.6	0.7	0.5	0.6	0.5	0.6	0.7	0.8	0.9	1.0	
	Minimum		0.5	0.3	0.2	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	

somewhat low the drop following operation is on the average greater on a percentage basis than it is when the original level is oormal

Chart 3 and Table 4 give the data on cases where the preoperative level would not be considered in any way to be a low normal. These levels were drop occurs postoperatively This drop is of the order of magnitude of from 30 to 50 per cent

Changes in the plasma cevitamic acid level are influenced by changes in the intake, absorption or utilization of the vitamin As mentioned above, none of these patients were given cevitamic acid,

therefore the only source was in the food For one to three days after operation very little food was taken, or if food was taken, little of it retained It was impossible for us to keep track of and consider the feeding of these patients as individuals Their diet was the usual one given after such operations in this hospital

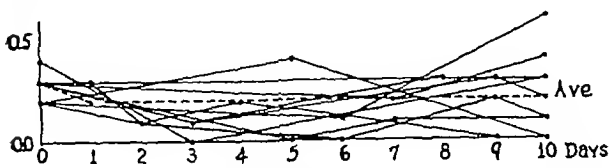

CHART 3 *Effect of Operation on Blood Plasma Cevitamic Acid Level*

Eleven cases with initial levels between 0.2 and 0.5 mg per 100 cc

ever, it is well known that any infection or other cause of increased metabolism causes extra demands for this vitamin, and causes the plasma vitamin C level to fall if the vitamin is not supplied After any operation, and without there being any definite complication, there is apt to be a slight fever for from two to four days It is reasonable to suppose that extra amounts of this vitamin are used up because of the fever and its ass

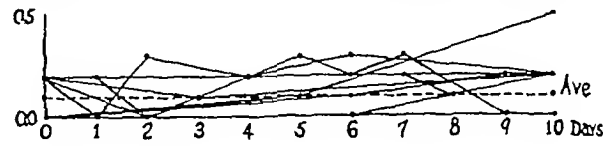

CHART 4 *Effect of Operation on Blood Plasma Cevitamic Acid Level*

Thirteen cases with initial levels less than 0.2 mg per 100 cc

TABLE 4 *Effect of Operation on Blood Plasma Cevitamic Acid Level (11 Cases with Preoperative Levels of 0.2 to 0.5 mg per 100 cc)*

Case No	Operation	Month	Plasma Cevitamic Acid Levels: Preoperative	Postoperative (days) 1	2	3	4	5	6	7	8	9	10	Anesthesia
			mg	*mg*	*mg*	*mg*	*mg*	*mg*	*mg*	*mg*	*mg*	*mg*	*mg*	
1	Cholecystectomy	September	0.4	0.3	0.2	0.0	0.0	0.1	0.1	0.2	0.2	0.3	0.3	Nitrous oxide and ether
2	Hysterectomy	December	0.3	0.3	0.1	0.1	0.1	0.0	0.0	0.1	0.1	0.2	0.1	Nitrous oxide and ether
3	Closure of colostomy	December	0.3	0.2	0.2	0.1	0.1	0.2	0.2	0.2	0.2	0.3	0.2	Nitrous oxide and ether
4	Hernia	March	0.3	0.3	0.2	0.1	0.2	0.2	0.2	0.3	0.3	0.3	0.3	Spinal
5	Hernia	January	0.3	0.2	0.2	0.1	0.1	0.0	0.0	0.1	0.1	0.1	0.1	Spinal
6	Hernia	January	0.3	0.3	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	Spinal
7	Cholecystectomy	March	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	Nitrous oxide and ether
8	Hernia	April	0.2	0.2	0.1	0.2	0.2	0.2	0.2	0.1	0.1	0.0	0.0	Spinal
9	Hernia	December	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.2	0.3	0.5	0.6	Spinal
10	Hernia	January	0.2	0.2	0.3	0.3	0.3	0.4	0.3	0.2	0.2	0.1	0.0	Spinal
11	Hernia	March	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.4	Spinal
	Average		0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	
	Maximum		0.4	0.3	0.3	0.3	0.3	0.4	0.3	0.3	0.3	0.5	0.6	
	Minimum		0.2	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	

TABLE 5 *Effect of Operation on Blood Plasma Cevitamic Acid Level (13 Cases with Preoperative Levels below 0.2 mg per 100 cc)*

Case No	Operation	Month	Plasma Cevitamic Acid Levels: Preoperative	Postoperative (days) 1	2	3	4	5	6	7	8	9	10	11	Anesthesia
			mg	*mg*	*mg*	*mg*	*mg*	*mg*	*mg*	*mg*	*mg*	*mg*	*mg*	*mg*	
1	Cholecystectomy	March	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	Spinal
2	Exploratory laparotomy carcinoma of gall bladder	April	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	Spinal
3	Appendectomy	December	0.2	0.2	0.0	0.1	0.2	0.3	0.2	0.3	0.2	0.0	0.0	0.3	Nitrous oxide and ether
4	Cholecystectomy choledochostomy	January	0.2	0.0	0.3	0.2	0.2	0.3	0.3	0.3	0.2	0.2	0.2	0.1	Nitrous oxide and ether
5	Supracervical hysterectomy	April	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	Nitrous oxide and ether
6	Colostomy	April	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	Nitrous oxide and ether
7	Herniorrhaphy	April	0.0	0.0	0.1	0.1	0.1	0.1	0.2	0.3	0.4	0.4	0.5	0.5	Spinal
8	Hernia	March	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	Spinal
9	Herniorrhaphy	March	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	Spinal
10	Hernia	April	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.2		Spinal
11	Chole ystectomy exploration of common duct	September	0.2	0.2	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2		Ether
12	Cholecystectomy appendectomy	May	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	Nitrous oxide and ether
13	Cholecystectomy	July	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	Ether
	Average		0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	
	Maximum		0.2	0.2	0.3	0.2	0.2	0.3	0.3	0.3	0.4	0.4	0.5	0.5	
	Minimum		0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	

All the values listed as 0.2 mg ranged from 0.15 to 0.20 mg per 100 cc but are so listed because the second figure is not considered to significant

Without studying each point separately one cannot determine the relative importance of the different factors that might cause this drop How- ciated increase in metabolism It is also possib that the demand of the newly formed tissues th are taking part in the healing process may u

up the vitamin at a rate faster than that for normal growth

SUMMARY AND CONCLUSIONS

Plasma cevitamic acid determinations were made before and after operation on 43 patients coming to major operation

In nearly every case there was a prompt fall after operation from the original level

In a few cases the level began to rise again after four or five days.

Whether this fall is important from the standpoint of healing or recovery will be the subject of future study

A low plasma vitamin C value in a blood drawn from a patient in the period immediately after operation may not be so significant an indication of depleted reserves as is a low value before operation

I am indebted to Leo Kahn Catherine Guenther Kathrine Washburn and Percy Lusona for their technical assistance.

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VERMONT STATE MEDICAL SOCIETY

PATHOLOGIC CONDITIONS IN THE BILIARY TRACT*

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MONTREAL

BEFORE proceeding with a consideration of the pathologic lesions of the biliary tract I shall review briefly the histological anatomy of the gall bladder and the bile ducts

The normal gall bladder consists of five coats. From within outward they are the tunica mucosa tunica muscularis, tunica fibrosa tunica subserosa and tunica serosa The last two are part of the general peritoneal structure and do not properly belong to the gall bladder They consist of the peritoneum and subperitoneal tissue where they cover the gall bladder The first three coats mentioned constitute the gall bladder proper

The tunica mucosa consists of a lining of tall columnar epithelial cells with rounded or oval nuclei situated near their bases These cells secrete a mucus-like substance which on appropriate staining is seen as minute droplets at the free margins of the cells Specks of bile pigment and minute quantities of lipoids are found near the base of the cells According to Boyd[1] the normal mucosa of the gall bladder contains by dried weight about 0.6 per cent of lipoids. The epithelium rests on the delicate and loosely arranged connective tissue—lamina propria—of the mucosa The surface area of the mucosa in the non distended gall bladder is much larger than that of the other coats, and to accommodate itself to its enclosure it is thrown into folds which form, roughly, polygonal figures resembling the face of a waffle iron On section they appear as papillae The longer folds lie in the long axis of the gall bladder There are no glands in the body of the normal gall bladder but at its neck are found tubuloalveolar glands similar to those in the bile ducts

The second coat the tunica muscularis, is composed of bundles of smooth muscle separated by strands of loose connective tissue

The third coat the tunica fibrosa is a fairly robust, complete fibroelastic investment which carries the larger vessels and nerves supplying the gall bladder At the liver attachment of the gall bladder the tunica fibrosa is continuous with Glisson's capsule In this area may be found ducts lined by columnar epithelium They are present in the embryo as well as in the adult They do not connect with the gall bladder but are continuations of bile ducts from the liver and are known as Luschka's ducts.

The extrahepatic bile ducts are somewhat similar in structure to the gall bladder but elastic tissue is much more plentiful and muscle is very scanty except at the sphincter of Oddi Tubuloalveolar glands are numerous in their walls and extend deeply even beyond the walls where they become invested with a fibroelastic coat

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the stone reached the ileocecal valve In two of our autopsy cases with stone in the common duct, perforation of the duct was followed by generalized bile and suppurative peritonitis In one, the stone had ulcerated through the duct wall and lay in the periductal tissue This stone could not be felt with the exploring probe A biliary fistula followed the ulceration, with resulting peritonitis

There are reported in the literature several cases of bile peritonitis due to seepage of bile from the gall bladder or ducts without any perforation We have not observed any such condition It is probable that in these cases a minute perforation had occurred somewhere The two in the common duct just referred to might easily have been overlooked

Congenital atresia of the bile ducts may be due to two conditions failure of the ducts to canalize and fetal intrauterine infections The second condition is believed to be commoner In a month-old baby the common duct was markedly narrowed and no bile had entered the intestine Histological section revealed an intact mucosa lined by epithelium The lumen was not obliterated but was markedly constricted by chronic inflammation and fibrosis of the wall

Tumors other than those of epithelial origin are rare, but submucous lipoma, fibroma and neuroma have been reported Of the epithelial tumors there are the benign papilloma and the carcinoma

In the gall bladder, papillomas, unless they bleed or cause obstruction at the neck, are usually accidental findings In the ducts they cause obstruction and must be dealt with accordingly They appear as papillary outgrowths from the mucosa, and although they may invade the wall they may still be benign Carcinoma may develop at the base of a papilloma

In one of our cases, a woman of sixty-four, there was a large papilloma in the body near the fundus, another near the neck and an obstructing one in the cystic duct The gall bladder was dilated and filled with blood There were no stones and no cholecystitis In another case the tumor was in the common bile duct and was successfully removed

That papilloma of the biliary tract is not infrequently multiple should always be kept in mind It may be associated with papilloma of the duodenum at the ampulla of Vater, as was illustrated by a recent case of obstructive jaundice operated on at the Montreal General Hospital A large papilloma was found in the duodenum at the ampulla which at first was thought to be the cause of the obstruction but as the surgeon prepared to remove it he discovered that the lower parts of the common bile duct and pancreatic duct were plugged with similar growths

Carcinomas of the gall bladder and bile ducts are usually adenocarcinomas but may be of the simplex type Their form may be villous, nodular or diffuse When diffuse the gall bladder or ducts may be converted into a thickened, rigid tube Mucous secretion by an adenocarcinoma may be a prominent feature, producing a gelatinous cancer A favorite site of origin is near the neck of the gall bladder with obstruction and resulting dilatation and suppuration of the remainder of the body and fundus which may become palpable through the abdominal wall Not infrequently the whole gall bladder is diffusely infiltrated, thickened and indurated

The gall bladder may shrink to a small, hard mass, frequently encasing stones On the other hand, very bulky gelatinous or villous tumors may greatly distend the gall bladder or form large masses adherent to and infiltrating the surrounding viscera Small villous tumors in the fundus offer the best prognosis A man of forty-two had had repeated attacks of biliary colic The gall bladder was found greatly distended with blood and there were clots in the common duct In the fundus was a small papillary carcinoma from which the bleeding originated

Extension to the liver is common, as well as more distant metastases An important secondary growth is that which occurs in the ovaries and which may reach bulky dimensions

The association of carcinoma of the gall bladder with stones is exceedingly common In our own material this association was seen in 70 per cent, and with chronic cholecystitis in 77 per cent Kaufmann[8] quotes the figure as 86 per cent So it appears that gallstones and chronic cholecystitis play an important etiologic role One is reminded again of the active, benign epithelial hyperplasia referred to above under chronic cholecystitis glandularis proliferans Carcinoma of the gall bladder is more frequently found in women than in men, which is also the case with gallstones

In the extrahepatic biliary ducts there is a great tendency to sclerosis of the tumor Early stricture often leads to death before metastases occur However, many cases metastasize early and the growth may become widespread Depending on the position of the tumor the results of obstruction vary In supposedly benign fibrous stricture, careful histological examination will often prove it to be carcinomatous

In two of our patients in whom there was progressive jaundice but with bile in the feces, followed later by complete biliary obstruction, the tumor had involved first one hepatic duct, causing

obstruction and jaundice but with a normal flow of bile from the other duct until it too became involved causing complete obstruction.

Carcinoma of the extrahepatic bile ducts is less common than gall-bladder carcinoma the ratio being about 1-4 In a review of 9523 consecutive autopsies at the Montreal General Hospital reported by McLaughlin,[9] in which there were 782 carcinomas, 24 were in the gall bladder and 7 in the ducts It is commoner in men than in women the ratio being 3.2. The favorite site is at the junction of the three large ducts

There is not the same amazing association with gallstones as in carcinoma of the gall bladder yet they are present in about one third of the cases, and are considered by many to be an important etiologic factor

From facts and opinions it would seem that the treatment of cholelithiasis, with or without symptoms, is indicated if the incidences of cholecystitis and of bile-duct and especially gall bladder carcinoma are to be reduced

SUMMARY

The histology and pathology of the biliary tract are reviewed

Anomalies other than the common variations of the part are presented

Special consideration is given to cholelithiasis and cholecystitis with particular attention to the role of disturbed liver metabolism and cholesterolosis of the gall bladder in the etiology of cholelithiasis and cholecystitis

The condition referred to as cholecystitis glandularis proliferans (cystica) is described, and its development and its relation to carcinoma discussed

The pathology of the common epithelial tumors, papilloma and carcinoma, of the extrahepatic biliary tract and their relation to cholelithiasis and cholecystitis are summarized

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CLINICAL NOTE

SULFANILAMIDE DRUG FEVER A SECOND ATTACK OF SUDDEN ONSET*

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During the past two years sulfanilamide has been found to be so efficacious in the treatment of various disorders that the danger of its indiscriminate use must be kept constantly in mind, various undesirable effects have been commented upon by many others,[1] and need not be discussed here, but the following case report may help to emphasize another reason for caution in choosing the drug

CASE REPORT

An 18-year-old boy was admitted to the infirmary on February 18, 1937, complaining of severe sore throat, the pharynx was diffusely inflamed, and the temperature was 102°F A throat culture showed large numbers of beta-hemolytic streptococci, and on the day following admission the patient was started on 20 gr of sulfanilamide given five times daily His condition rapidly improved, and on the 6th day the temperature was normal and a throat culture showed very few colonies of beta hemolytic streptococci On the 12th day the patient complained of general malaise and a diffuse morbilliform rash appeared over the entire body

In January, 1939, the patient developed an acute urethritis and sulfanilamide was prescribed by a consultant On January 27 four doses of sulfanilamide of 20 gr each were taken During the afternoon, shortly after the second dose, general malaise with headache developed and at 7 o clock in the evening the patient was admitted to the infirmary with a temperature of 100 2°F, headache, malaise and chilliness, and moderate cyanosis of the lips The sulfanilamide therapy was stopped and fluids were forced, the following day the temperature reached 104°F and the feeling of general malaise and other symptoms persisted late that afternoon a faint rash was noticed, and on the following morning there was a diffuse morbilliform rash over the entire body The white blood-cell count at admission was 17,000, and this fell on the following day to 9000 On the 4th day the temperature became normal, and all the symptoms disappeared, the rash gradually faded, and had almost cleared up by the 6th day

The patient in question was treated with sulfanilamide in 1937 because of a severe beta-hemolytic streptococcal pharyngitis developing in the course of a small epidemic [2] At this time knowledge concerning the administration and dosage of the drug was limited, and the patient received a somewhat larger dose of sulfanilamide over a longer period of time than would probably be given today, he subsequently developed a typical sulfanilamide drug fever

In January, 1939, sulfanilamide was prescribed when the patient developed an acute urethritis, four doses of sulfanilamide of 20 gr each were followed in a few hours by malaise, headache, chilliness and fever, and in thirty-six hours by a diffuse, morbilliform rash The absence of upper respiratory tract symptoms and the initial leukocytosis supported our impression that the malaise and fever were not associated with a mild type of influenza, which was somewhat prevalent in the community at that time, and the quick development of the rash seemed to justify the opinion that the entire illness was sulfanilamide drug fever The administration of sulfanilamide was stopped directly after the onset of symptoms

It seems logical to assume that in this case the course of sulfanilamide given in 1937 with its subsequent drug fever sensitized the patient to sulfanilamide, and that consequently only a relatively small amount of the drug was sufficient in 1939 to produce drug fever within a few hours after therapy had been started In view of the possibility of sensitizing an individual to sulfanilamide by a course of treatment with the drug, still another reason for care in selecting it as a therapeutic agent is made evident It would be unfortunate were one to find that a patient had previously been given sulfanilamide for a mild illness, or for one in which sulfanilamide is not effective, and was therefore unable to tolerate the drug when suffering from one of the very serious diseases in which it is so effective

SUMMARY

A report is made of the rapid development of sulfanilamide drug fever after the administration of a small amount of sulfanilamide to a patient who two years previously had had sulfanilamide drug fever

The possibility of sensitizing a patient to sulfanilamide is suggested as another factor in deciding as to whether the drug should be given

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From the Isham Infirmary Phillips Academy Andover Massachusetts

PAPERS FROM THE FAULKNER HOSPITAL

CONGENITAL ARTERIOVENOUS FISTULA

With A Report of a Case Relieved by Operation

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CONGENITAL arteriovenous fistula is a term applied to those anomalous communications between arteries and veins, without an intervening capillary circulation. Much confusion has existed concerning the nomenclature of this condition, it usually being described according to its superficial characteristics rather than on the basis of the underlying pathologic lesion. For example, some of the synonyms are cavernous hemangioma, cirsoid aneurysm, arteriovenous aneurysm, hemihypertrophy of the extremities, and racemose arterial angioma. The fundamental process is the same whether in an extremity or the brain.

PHYSIOLOGY AND LOCAL EFFECTS

With increase of venous pressure as the result of direct arterial inflow, the veins take on certain characteristics of the arteries that is, they enlarge, may pulsate, and contain calcium deposits, and the oxygen content of the blood approaches that of the arteries. The surface temperature of the involved part increases as the result of increased collateral circulation. Soft tissue changes, in the nature of edema, thickening, atrophy and trophic disturbances, ensue as the result of circulatory deficiency. The healing powers of the skin are greatly diminished. In the bones lengthening usually occurs, provided the fistulas are present before the epiphyses fuse to the shaft. Rarely, as in one of the present cases, actual shortening and bone atrophy occur as the result of diminution in the amount of blood to the part. Thrills and bruits are occasionally detected, but since these signs reflect large fistulous communications they are more frequently manifestations of acquired arteriovenous fistulas.

Systemically, a rise in the systolic and a lowering of the diastolic blood pressure, an increase in total blood volume, and enlargement of the heart may occur. The latter is more often seen in the acquired type. Occasionally the bradycardiac reaction occurs. This phenomenon is brought about by closure of the fistula either by pressure or by operation, which results in a decrease in pulse rate, reversal changes in the diastolic and systolic pressures, and a lowering of venous pressure.

DIAGNOSIS

The patient may not be aware of the underlying condition until trauma aggravates it. Occasionally, dyspnea and a rapid pulse, stigmas of cardiac hypertrophy secondary to a fistula are the first symptoms to bring the patient to the doctor. As a rule, the appearance of distended veins, plus a feeling of increased warmth in the extremity, apprises the patient of his condition. The presence of varicosities, soft-tissue hypertrophy with accompanying trophic disturbances, increase in length of the limb, x-ray evidence of bone changes and lastly but most important, the finding of arterial blood in the vein establishes the diagnosis. The bright red color of arterial blood in a sample withdrawn from the vein into a syringe is an indication of increased oxygenization, but the most accurate method is the determination of the oxygen content of the blood by the Van Slyke[1] gasometric method after it has been removed from the vein under oil.

TREATMENT

Operative treatment in this disease has been extremely unsatisfactory. The fistulas, as a rule, are small and multiple, and many of the communications are actually in bone. In a number of cases where the main vessels have been ligated in the course of operation amputation of the limbs has been necessary. In a study of 27 cases, Lewis[2] reports 13 amputations—6 of the upper and 7 of the lower extremity. In those cases where the fistulous communications are located in a small area of the limb, fractional ligation of the main trunks may well accomplish a successful result. Injection of the regional veins with sclerosing solutions offers help in certain cases where trophic disturbances, such as ulceration and eczema, occur. In 11 of the 13 cases in this report the patients presented themselves with painful ulcerations of the feet and legs. All were healed after the adjacent veins had been obliterated and support of the legs carried out for a period of two or three

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months Injections may be repeated as often as necessary

A complete cure is only rarely effected by operation This results only if the following requirements in a given case are fulfilled localization of the disease to one limb, absence of fistulas in bones, and a patient who is young and in such physical condition as to withstand a long and sometimes shock-producing operation It was believed that the case reported below satisfied these conditions and, accordingly, an operation on the patient was performed

REPORT OF CASE

H M, a 23-year-old, single girl, was referred on March 7, 1938, by Dr Arthur Jackson, of Everett, Massachusetts, for varicose veins of the right leg and thigh and a large hemangioma on the anterolateral aspect of the mid thigh These lesions had existed since birth An operation for the removal of the varicosities and the angioma had been performed when the patient was 12 years of age, but recurrence followed within a short interval For several years, the veins had increased rapidly in size and number Soft tissue swelling had produced easy fatigue, heaviness and warmth in the involved limb, and a tendency to excessive perspiration During the year preceding admission, the patient had begun to tire easily and noted increasing dyspnea and palpitation of the heart on exertion She no longer cared to engage in any exercise, such as dancing, and ordinary work was beginning to fatigue her Bandages and other supports had not eased the heaviness of the leg The patient was admitted to the Faulkner Hospital for study on June 15

Physical examination revealed a well-developed girl in excellent condition except for the right thigh and leg In relation to the history of probable cardiac distress, it may be stated that the heart sounds were normal and there was no cardiac hypertrophy The right thigh and leg showed enormous varicosities spreading over their anterolateral and anteromesial aspects, apparently having their roots in a large angiomatous mass on the anterior mid thigh, where there were numerous scars of previous incisions (Fig 1) Soft tissue swelling was tremendous, the right leg, with the patient in the recumbent position, measuring 37 5 cm in circumference at the calf, as against 33 8 cm at a corresponding point on the left leg, and 53 8 cm in the right mid thigh, as against 47 5 cm in the left. There were no thrills, bruits or pulsations in the veins

X ray films of the long bones of both legs revealed no lengthening and no thickening of the femur or tibia on either side There was no roentgenological evidence of cardiac enlargement. The electrocardiogram was negative. Skin temperature determinations, using the Tycos Dermatherm, showed an increase at right mid thigh, mid leg and foot of approximately 2 5°F over the corresponding points on the left extremity The oxygen content of the venous blood from the right thigh was 19.3 vol per cent, from the right leg, 18 7 vol per cent, and from the unaffected opposite limb, 11 vol per cent (a normal figure)

The patient submitted to operation June 23 The operation was performed under spinal anesthesia A 30-cm incision was made from a point just over the femoral artery at the inguinal ligament down the mesial aspect of the thigh to the junction of the middle and lower thirds The femoral artery and vein were found

FIGURE 1 *Anterior and Lateral Views before Operation*

Note the large distended veins and the angiomatous mass on the anterolateral aspect of the right thigh

FIGURE 2. *Anterior and Lateral Views Six Months after Operation*

and isolated without difficulty The profunda femoris artery was also identified. The femoral vein was greatly distended and somewhat tortuous. Eight separate fistulas between the artery and vein were discovered in the exposed area These were ligated with silk and divided. Some difficulty was experienced with one of these where artery and vein were practically adherent for a distance of 1 0 cm Further search revealed no more arteriovenous communications in this area It was deemed inadvisable to explore the popliteal space. Several masses of varicosities were removed from the surface of the thigh Considerable bleeding occurred from these areas, which proved to be venous tufts of the angiomatous mass. The patient stood the long operation well and was returned to her room in good condition. Her convalescence was uneventful and she was discharged home after 2 weeks.

During the next 8 months the patient's condition gradually improved. The wounds healed by first intention The remaining varices were sclerosed by injections of sodium morrhuate and Monolate. The soft-tissue swelling of the thigh and leg subsided considerably (Fig 2) The angioma gradually disappeared. Subjectively the patient's fatigue and lassitude have gone and she no longer has dyspnea or palpitation. She is back at work and carrying on her active duties. No further operative procedure is contemplated.

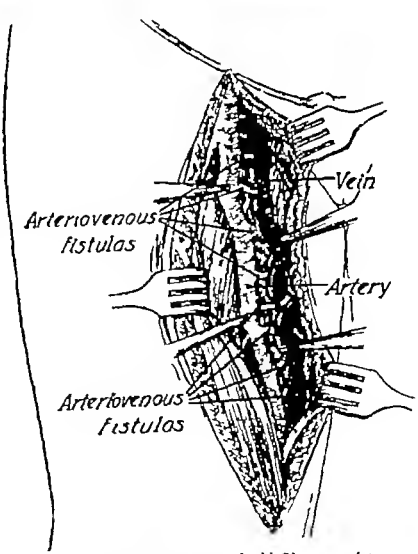

FIGURE 3. *Drawing of Operative Field Showing Arteriovenous Communications*

Note the large fistula near the center of the incision where the artery and vein are adherent for about 1 cm

COMMENT

Congenital arteriovenous fistulas are still sufficiently rare to warrant reporting all cases In a series of 447 cases of arteriovenous aneurysms collected by Callander and noted by McNealy[3] only 3 were congenital. Lewis[2] reported 30 cases of congenital arteriovenous fistula in 1930, including 6 of his own Horton[1] in 1931 from the Mayo Clinic, reported 24 cases of congenital arteriovenous fistula including those found in the extremities.

This present report is based on a series of cases observed by the writer over the past five years.

In the 13 cases listed in Table 1, there are several which require further comment In Case 1, there was found an actual shortening of the involved limb, the only case of its kind which has come to our attention In this case also were found a bruit, a thrill and the bradycardiac reaction, all

ous operation The fistulas, in this instance, were in the foot Following the ligation of the main arterial trunk, two toes became gangrenous and amputation was necessary

It should be noted in the table that in all cases in which oxygen determinations were carried out

TABLE 1 *Findings in 13 Cases of Congenital Arteriovenous Fistula*

Case No	Sex	Age	Location	Blood Pressure		Bone Involvement	Trophic Changes	Cardiac Hypertrophy	Increase in Surface Temperature	Other Clinical Manifestations	Oxygen Content	
											Involved extremity	Corresponding normal extremity
		yr		mm of Hg					°F		vol %	vol %
1	F	19	Left arm	Left arm Right arm	140/90 120/85	Shortening	0		5 0	Bruit thrill bradycardia	17 4	9.2
2	F	17	Left arm	Left arm Right arm	152/100 130/90	Lengthening	0		3 5	Bruit thrill bradycardia	17 2	9 4
3	M	20	Left hand	Left arm Right arm	124/80 120/80	0	Eczema	0	2 0	0	16 5	10.2
4	F	34	Left foot	Both legs	126/90	0	Eczema ulceration	0	3 0	0	18 0	10 1
5	F	29	Right leg	Both legs	118/80	Lengthening	Ulceration	0	1 2	0	17 5	9.5
6	M	35	Left leg	Both legs	132/90	Lengthening	Ulceration		2 4	0	17 8	11 0
7	M	50	Left foot	Both legs	150/110	Lengthening	Ulceration	0	0 5	Previous operation	13 9	10.9
8	F	18	Left leg	Both legs	110/78	0	Ulceration	0	4 2	0	—	—
9	F	14	Right leg	Both legs	118/80	0	Ulceration	0	4 0	0	—	—
10	F	22	Right leg	Both legs	130/90	Lengthening	Ulceration		3.2	0	—	—
11	M	40	Left leg	Both legs	114/74	Lengthening	Eczema		3 4	0	—	—
12	F	30	Left leg	Not taken		0	Eczema	0	1 2	0	18 7	10 8
13	F	23	Right leg	Right leg Left leg	140/100 122/66	0	Eczema	0	2 5	0	19 3	11 0

signs of large fistulous communications In only one other patient, Case 3, did these phenomena occur Bone lengthening occurred in 6 cases, and there were no bone changes in a like number The most consistent findings in patients with congenital arteriovenous fistulas are trophic disturbances in the soft tissues These occurred in 11 cases The long duration and extensive involvement of the condition, with a background of deficient circulation, predispose to these changes Atrophy of muscle and skin, with impaired vitality and susceptibility to minor infections, is characteristic Ulceration, eczema, edema and fibrosis are later complications Only one patient, Case 7, had had previ-

there was a rise of oxygen in the venous blood which approximated that of arterial blood

SUMMARY

Thirteen cases of congenital arteriovenous fistula are reported, with a detailed account of one, relieved by operation

270 Commonwealth Avenue.

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CASE RECORDS OF THE FAULKNER HOSPITAL

Antemortem and Postmortem Records as Used in Monthly Clinicopathological Conferences

Directed by J. BEACH HAZARD, M.D.

CASE 6392

PRESENTATION OF CASE

A thirty-two-year-old American waitress was admitted with the complaint of headache.

Eight months preceding admission she began to lose her capacity to concentrate and became quite irritable. Her vision had always been poor but at this time became worse. She also developed constipation whereas previously bowel habits had been normal. Five months preceding entry she began to have severe bilateral frontotemporal headaches which came on chiefly in the morning and afternoon. At times she was nauseated and vomited, the latter being on occasions of projectile type. She developed at about this time an unusual thirst which was accompanied by polyuria and nocturia of two times. Three months preceding entry she became so incapacitated that she had to discontinue her work. She visited her family physician who found that her blood pressure was 260 systolic. She was sent to a hospital for observation, and there she had skull and chest plates, both of which were said to be negative, as was a lumbar puncture. At about this time she had one attack of paralysis of the right arm which lasted a few hours. During a period of two weeks she menstruated twice, whereas previously catamenia had always been regular. Two and a half months before admission she entered another hospital where she had repeated lumbar punctures, which showed an initial pressure of 215 mm., dropping to 120 mm. after 10 cc. of fluid had been removed. There were no cells in the sample the gold sol was 0000000000 the total protein was 75 mg. per 100 cc., and the sugar 67 mg. One intravenous renal function test at this time showed a phenolsulfonephthalein excretion of 5 per cent in fifteen minutes and 20 per cent in one hour and a repeat test showed 15 per cent excretion in fifteen minutes and 40 per cent in one hour. An intravenous pyelogram revealed a normal sized kidney with slight impairment of concentration of the dye. The total serum protein was 6.5 gm. per 100 cc., and the nonprotein nitrogen 28 mg. An eye consultant reported conical corneas in both eyes, with atrophy of the right optic nerve and choking of the left disk with some hemorrhage. Her blood pressure at this time was 245 systolic, 145 diastolic. Urine examinations showed a large trace of albumin, and all specimens contained many red cells. The specific gravity never went above 1.015. The average red-blood-cell count was 3,500,000 with a hemoglobin of 95 per cent (Tallqvist). Treatment consisted of intramuscular magnesium sulfate, venesection, lumbar puncture and sedatives, but did not give much relief. The headaches seemed to come in cycles and disappeared when her systolic blood pressure level had decreased to about 200. She was discharged from the hospital about one month preceding admission. Following discharge she was at first well and then again began to have a severe headache, which was uncontrolled by huge doses of sedatives, venesection or the intravenous administration of 50 per cent glucose solution. After four or five days the headache was less severe, but she continued to vomit and to have attacks of aphonia, blindness and paralysis, all of which were transitory.

Her father had died at fifty-three of Bright's disease and carcinoma of the rectum. Several uncles and aunts had had Bright's disease. Her mother was sixty-one years old and living and well. Her husband was dead. She had had one pregnancy eight years before admission, which ended in a stillbirth. At this time her blood pressure was normal.

At the age of five she had received an injury to her right eye associated with a compound fracture of the skull and had been practically blind in that eye subsequently. She had had herpes zoster at ten years of age. A year before she was admitted to this hospital she had some teeth extracted and this was followed by a skin rash and arthritis which disappeared after a few weeks. She had been in good general health until her present illness.

Physical examination showed a well-developed and nourished, pale, restless woman, complaining of severe headache. There was an excess of hair on the legs and arms, and the pubic hair showed a masculine distribution. Her breasts were small. The eyes were exophthalmic, and the eyegrounds were not seen due to conical corneas. The pupils reacted to light. The throat and tongue were negative. The heart was enlarged 2 cm. to the left but the right border was in a normal location, there was no increase in supracardiac dull

ness There was a soft systolic murmur at the apex The pulse rate was regular The lungs were clear The abdomen was soft and presented slight tenderness in the epigastrium and in the lower abdomen on both sides A vaginal examination revealed tenderness in the right vault, with pain on movement of the cervix There were no masses, but the uterus was pulled over to the left and fixed The knee jerks were normal, and there was no Babinski

A catheterized specimen of urine was pinkish-brown, slightly alkaline and of a specific gravity of 1 014 and showed a heavy trace of albumin and no sugar, the sediment contained many red cells and numerous leukocytes The white-cell count was 11,100 with 80 per cent polymorphonuclears The red-cell count was 4,800,000 with a hemoglobin of 97 per cent (Sahli) The blood nonprotein nitrogen was 30 mg per 100 cc, and the blood Hinton test was negative

After admission, pain was relieved by ¼ gr of morphine, but she was quite restless and vomited about 50 cc of yellowish fluid Breathing was at times irregular with a rate for a few hours of 15 but usually of 20 During the night of admission headache was controlled by ¼ gr of morphine administered twice A urine specimen on the second day of admission was reddish and slightly acid, with a specific gravity of 1 012, and contained a heavy trace of albumin but no sugar, the sediment was similar to that on the previous day On the second day after entry she was quite talkative and seemed to be better oriented but complained of headache, chiefly on the right side Breathing was at times irregular, and 7½ gr of caffeine sodiobenzoate was administered Several hours after eating a good dinner, she again developed severe pain in the right side of her head, for which ½ gr of luminal was given, and shortly after this she became very restless and complained of pain in the neck, 7½ gr of caffeine sodiobenzoate was given intramuscularly About an hour later respirations seemed labored and caffeine sodiobenzoate was repeated At this time her pulse was weak and irregular, the pulse rate was 100, and the respirations 8 Respirations ceased about half an hour later, but her heart kept on beating for ten minutes after breathing stopped During her hospital stay her systolic blood pressure varied from 260 to 300, and her diastolic pressure rose constantly from 150 to 180 The temperature showed a gradual fall from 99 2 to 97 8°F

Differential Diagnosis

Dr Channing Frothingham The medical internist has an advantage in these clinicopathological conferences because he knows he is considering a fatal disease whereas the surgeon may be presented with a problem solved just by biopsy

This patient was admitted with the chief complaint of headache, and knowing it is a fatal disease we need not consider the conditions that have a favorable prognosis Acute infection can be ruled out on the basis of the afebrile course We are dealing with some type of chronic disease the outstanding symptom of which was headache I think at once of the possibilities of nephritis and vascular disease, with the primary cause of the symptoms in her head Added evidence of an intracranial lesion are the personality changes, the disturbance of vision and projectile vomiting The development of constipation suggests the possibility of tumor even though her youth detracts from emphasizing a change of bowel habits With symptoms suggesting an intracranial lesion a tumor metastatic from the intestine is to be considered

The unusual thirst, polyuria and nocturia are suggestive of diabetes insipidus or diabetes mellitus The latter can be readily ruled out These symptoms are apt to occur also with disturbances in the circulation or a growth in or about the pituitary

A systolic blood pressure of 260 is ordinarily too high to have been caused by a brain tumor It is also higher than that usually associated with chronic vascular nephritis, and it makes me very suspicious that we are considering a patient who has a primary elevation of the blood pressure, the cause of which is probably unknown The fleeting attack of paralysis of the right arm makes one think of a cerebral vascular accident, but the possibility of a brain tumor must still be kept in mind The lumbar punctures done before admission only showed increased intracranial and spinal-fluid pressures, a finding which is consistent with tumor or goes with hypertension The choking of the disk and retinal hemorrhage fit with vascular disease, intracranial new growth or chronic nephritis Albumin and blood were present in the urine, but no mention is made of casts This is unusual in chronic vascular nephritis, but in the type associated with destruction of afferent arterioles it is possible The injury to her eye at the age of five years is of practically no importance in explaining her present symptoms

The excess of hair on the legs and arms and the masculine distribution of pubic hair may be of some importance as certain types of hypertension are associated with lesions of the pituitary or adrenal glands The soft systolic apical murmur does not necessarily mean valvular disease as it can be explained on the basis of hypertension Tenderness in the right vault with pain on movement of the cervix might suggest some inflammatory le-

sion, but I cannot believe that is a factor Deviation of the uterus to one side suggests new growth in view of the possibility of metastatic intracranial tumor

In summary, the problem presented is that of a person who has hypertension accompanied by repeated cerebral vascular accidents This makes me believe that we are going out of our way when we try to make a diagnosis of tumor There is not a sufficient degree of peculiarity of the skin and skin appendages in the absence of growth disturbance to make me think too seriously of adenoma of the pituitary or adenoma of the adrenal They generally present a different picture than this Therefore, I am going to say that this patient has hypertensive vascular disease If one accepts this conclusion it must be decided whether it is the gradually progressive or the so-called malignant type. There is a difference in that the former usually shows lesions in the intima and a gradual thickening of the blood vessels while in the latter, there is in addition an acute destructive lesion involving all the coats of the small arteries If it is the malignant type of hypertensive vascular disease it may be more in evidence in the brain, in the heart or in the kidneys I am going to say that in this particular patient it was the malignant type and that the lesions were more pronounced in the brain and in the kidneys than they were in the heart the reason I say so is because there are very few symptoms pointing toward the latter, except hypertrophy The several attacks consistent with vascular accident certainly point toward the brain and the character of the urine, with much albumin and blood and nothing to suggest impairment of renal function or diffuse renal insufficiency, makes me think that there will be a lesion in the kidneys but it will be most evident in the afferent vessels to the glomeruli the lesion which is supposed to be characteristic of malignant hypertensive vascular disease As for the hypertension occurring with pituitary adenoma or adrenal tumor I do not believe we have enough evidence to justify such a diagnosis and it seems to me that the blood pressure is a little too high

A Physician Do you think there is any significance in the fact that her heart continued to beat for ten minutes after the respirations had ceased?

Dr Frothingham That does not mean anything to me. She apparently died from intracranial pressure. I think we shall find a fairly good sized intracranial hemorrhage.

Dr. Edward L Young Is it too late to consider a traumatic cyst?

Dr. Frothingham I do not believe that the symptoms of a cyst would be different from those of a gradually growing brain tumor, and with the latter there would be no reason for the condition in the kidneys

Dr David Halbersleben Isn't a nonprotein nitrogen of 30 mg per 100 cc. low for any important vascular disease of the kidneys?

Dr Frothingham I am making a diagnosis of malignant hypertensive vascular disease and believe that most of the lesions in this case are going to be in the head there is only going to be a reasonable number of lesions in the afferent vessels of the kidneys and they have not yet completely destroyed renal function Frequently the renal lesion is most important

Clinical Diagnoses

Malignant hypertension
Malignant nephrosclerosis.

Dr. Frothingham's Diagnoses

Hypertensive vascular disease, malignant type
Cerebral hemorrhage

Anatomical Diagnoses

Malignant nephrosclerosis.
Cerebral edema with cerebellar conus
Myocardial hypertrophy
Necrotizing arteriolitis pancreas, duodenum, spleen adrenals, gall bladder and kidneys
Old salpingo-oophoritis, left.
Ruptured corpus hemorrhagicum, left.

Pathological Discussion

Dr J Beach Hazard Dr Frothingham's diagnosis of the underlying pathologic process is correct The lesions present in this case were those that are found in the so-called malignant hypertensive disease The kidneys were typical of malignant nephrosclerosis although the tubules did not show the marked dilatation that one sees in completely decompensated kidneys This correlates with the findings of a normal nonprotein nitrogen We expected to find a cerebral hemorrhage, but there was none. The brain was enlarged and there was marked cerebral edema and a cerebellar conus The clinical picture is explained on the basis of this enlarged wet brain So-called hypertensive encephalopathy has two types of change as viewed at the autopsy table One is marked cerebral edema with an associated cerebellar conus. The other is an anemia of the brain and suggests the possibility of vasospasm

There was no tumor of the adrenal cortex or of the pituitary, though these possibilities are suggested by the change in secondary sexual characteristics. Necrotizing lesions were present in the arterioles of the small intestine pancreas, spleen

gall bladder, adrenals and kidneys, but there was practically no anatomic change in the vessels of the brain

Dr James A Halsted In regard to treatment, the only thing to do was to try to relieve her headaches, and as the record states, she was given sedatives and glucose and had venesections In one period of twenty-four hours she was given 9 gr of Nembutal, ¾ gr of morphine and venesection, none of which did any good in relieving the headache

I should like to bring up the question of whether morphine in the presence of cerebral edema has an ill effect I have an idea that, with cerebral edema, morphine is not a very good thing to give

Dr. Hazard I think it is an interesting point because in traumatic cerebral edema it is certainly not advised

A Physician Was there any lesion in the pelvis?

Dr Hazard There was an old salpingo-oophoritis on the left which possibly accounted for the fact that the uterus was tilted over to the side Also a ruptured corpus hemorrhagicum was found

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CASE 6393

Presentation of Case

A forty-two-year-old American fruit dealer was admitted with the complaints of pain in the left leg and inability to move it

Two days before entry, the patient was suddenly seized with severe abdominal cramps and collapsed Shortly afterward excruciating pain began in the left leg and he was unable to move it The leg was said to have been cold About one hour later the pain lessened but the right leg became painful and cold to the level of the hip A physician was called and prescribed morphine The marked pain in the right leg and inability to move it persisted throughout the night and the patient was unable to sleep The left leg had improved and was somewhat warm down to the knee, but below this was cold During the night he vomited once For the two days preceding admission there was little change His bowels did not move during this time Attacks of hiccoughing had occurred twice

For six months the patient had been getting treatments for hypertension His systolic blood pressure had been about 170 He was said to have been fibrillating for six months He had been taking two tablets of digitalis daily He had had rheumatic fever in his youth and was said to have had cardiac involvement

The temperature on admission was 100°F., the pulse 100, and the respirations 22 The blood pressure was 86 systolic, 64 diastolic The patient was stuporous and his face showed evidence of pain The pupils were equal but sluggish, the ocular movements were normal The tongue was dry and coated Heart sounds were irregular in force and rhythm but were of fair quality There was a marked pulse deficit The right side of the abdomen presented a faint cyanosis which could be blanched by pressure There was some edema on the right side Moderate muscle spasm to deep pressure was evident on the right Both arms were normal, and the radial pulses were felt There was a slight cyanotic tinge to the finger nails The left foot and lower leg were cold The toes were pale with a grayish-yellow tint The pulses of the femoral and popliteal arteries were good, but none were palpable in the foot The oscillometer showed an absence of all pulsations below the tibial tubercle. Above this level the mean pressure was about 120, with 5 oscillometric units of expansion The knee jerk was normal the skin sensations were not tested The right leg lay with foot drop and in eversion, and active motion was absent The knee jerk was absent The entire leg and foot were cold, very pale and grayish-yellow There was marked edema up to and including the hip The middle of the right thigh measured 51.2 cm., the left 46 2 cm No pulsations of the iliac or femoral arteries could be detected on the right side and the oscillometer showed no pulsations in the mid-thigh

A catheterized specimen of urine was of specific gravity 1 028 and showed a heavy trace of albumin and no sugar, the sediment contained 2 to 3 erythrocytes and 20 to 30 leukocytes per high power field and frequent coarse granular and occasional fine granular casts The white-cell count was 6700 with 73 per cent polymorphonuclears The red-cell count was 4,200,000 with a hemoglobin of 89 per cent (Sahli) A smear showed slight achromia but otherwise was negative

The patient was given 0 5 gm of Mecholin every three hours by mouth, and ¼ gr of morphine sulfate every three or four hours On the day following admission the right limb was warm to the knee, but below was extremely cold with a bluish mottling which included the knee The left leg was much warmer with a gradually developing coldness to the foot The color was somewhat better The blood pressure was 110 systolic, 70 diastolic His bowels had not moved nor had he urinated voluntarily An enema had produced no result The abdomen presented hyperperistalsis and he had several attacks of hiccoughing and tenderness in the right side of the

abdomen and a little shifting dullness in the flanks Vomiting frequently occurred and fluids were stopped on the second day and glucose in saline solution was given intravenously One and a half grains of digitalis daily was administered

An enema on the third day was followed by a spontaneous bowel movement expelling considerable feces and gas A urine examination showed a specific gravity of 1 021 no sugar a trace of albumin, and a sediment contained 2 to 10 erythrocytes and 2 to 10 leukocytes per high-power field He was stuporous but could be aroused and answered questions On this day his temperature rose to 101°F The abdomen was soft but there was tenderness in the right lower quadrant A slight icteric tint to the sclerae and the skin appeared The icteric index was 100 The nonprotein nitrogen was 72 mg per 100 cc. Diarrhea followed the period of constipation in the early portion of his stay but was readily controlled by kaolin and milk of bismuth The icteric index on the fourth day was 60

During the first six days after admission the left leg continually improved and the right developed a definite demarkation just below the knee On the sixth day after entry his right leg was amputated between the middle and lower thirds of the thigh A stool examination on the day of operation showed no occult blood Following operation he was delirious respirations increased and rales appeared at both bases The icteric index on the third postoperative day was 10 and a blood nonprotein nitrogen was 45 mg per 100 cc. On the sixth postoperative day he developed ptosis of the left eyelid and a right lower facial paralysis He continued to fail steadily and on the ninth postoperative day he showed signs of pulmonary edema, developed a weaker pulse and died

Differential Diagnosis

Dr. E. Everett O'Neil I suppose one could begin this discussion giving a number of possible causes of pain in the legs but I think we may restrict ourselves to the following three on the basis of his first complaint These are a ruptured plantaris tendon, which causes very acute pain in the posterior aspect of the leg later accompanied by swelling and frequently thrombosis thrombophlebitis, and acute arterial embolism The diagnosis of ruptured plantaris tendon can be ruled out because there is no evidence of injury in this case. In regard to thrombophlebitis and acute arterial embolism it is interesting to note that the differential diagnosis between these is often difficult Within the past year I have seen at least two cases that presented the usual clinical picture of arterial embolism but were finally diagnosed as acute thrombophlebitis The textbooks so often tell us that the presence of a swollen leg, distended veins and warmth, plus a dusky pallor indicates an acute thrombopblebitis In the early stages these signs do not always obtain, and one might easily mistake the condition for an acute arterial embolism It is a common observation that when an embolus has lodged at the bifurcation of the aorta or followed down to the bifurcation of the iliac arteries that the patient has abdominal cramps Ordinarily, coldness of the leg is not consistent with thrombophlebitis and is definitely in favor of an obstruction in the arterial tree. In the early stages of ao acute arterial block it is unusual to see such a complete process as this patient seems to have shown The improvement that occurred in the left leg suggests that even though there was a block high up, it had either moved downward or the collateral blood supply had compensated for it

The constipation and the moderate muscle spasm suggest that there was some process in the abdomen It would be easy to postulate some other condition accounting for this but in view of the subsequent story it does seem that it might well have been due to the same thing that had caused the lesions in the legs.

The cold foot and lower leg on the left observed on physical examination definitely fixed obstruction on that side in the popliteal region The oscillometric measurements simply corroborate what we can make out by careful examination and I think that by running the back of one's hand along the leg it is very easy to decide where the main trunks have been obstructed The examination of the right leg revealed a block higher than that on the left, probably within the abdomen presumably at the junction of the external and internal iliac arteries The difference in measurements of the thighs suggests that in addition to the arterial block there was some secondary venous thrombosis.

In regard to therapy I subscribe to the administration of morphine sulfate, but I am not sure that 0.5 gm of Mecholin given by mouth would be of very great value On the basis of clinical observation in these cases it would seem that a powerful antispasmodic is probably of value and should be given intravenously I have been using ½ gr of papaverine hydrochloride As an alternative I believe that fairly large doses of alcohol by mouth are preferable to Mecholin With a questionable arterial embolism, if the condition of the patient permits, a general anesthetic or spinal anesthetic would probably be of considerably more

value than any of these antispasmodic drugs in relieving the arterial spasm The latter, above everything else, is a factor in those cases of arterial occlusion which go on to develop propagating thrombi

The change in the right limb on the day following admission suggests that, in spite of the occlusion at the bifurcation of the iliac arteries, collateral circulation, of which there is an abundance in the upper thigh, had begun to act and increase the temperature of the part

The hyperperistalsis, tenderness and shifting dullness suggest obstruction, probably in the lower small bowel If we are postulating an arterial embolus, it is reasonable to suggest that on the way down to the peripheral blood vessels one of these thrombi stopped at the superior mesenteric artery and thus accounted for the ileus It is a little difficult for me to explain the shifting dullness The record says "a little shifting dullness in the flanks" I shall have to take that for what it is worth and say that there must have been some shifting dullness, but I am sure it is of no significance If any of you have seen an embolus of the posterior mesenteric artery you will recall that the whole segment served by that particular branch is entirely blanched out, absolutely the antithesis of the picture which you see in venous thrombosis The diarrhea following the period of constipation is in keeping with the cessation of obstruction of the superior mesenteric artery

In retrospect, we have a forty-two-year-old man who had a sudden pain in the left leg which gradually improved and was followed by a similar pain in the right leg and again a pain in the lower abdomen It is my opinion that this man in the presence of fibrillation, the result of old rheumatic heart disease, had an embolus which temporarily obstructed the orifice of the superior mesenteric artery, went on down and caused a saddle embolus at the bifurcation of the aorta Part of the embolus, in turn, slipped out of this area down into the left popliteal bifurcation, and another lodged in the bifurcation of the right common iliac artery causing the picture which has been described The condition went on to gangrene of the part, with death due to terminal pulmonary edema and pneumonia

Dr David Halbersleben Have you ever used spinal anesthesia as an antispasmodic?

Dr O'Neil I have not tried it

Dr Halbersleben If you had been the first doctor called to see this patient would you have operated at once or would you have waited to see if the spasm could be relieved?

Dr O'Neil I would definitely have considered embolectomy in this case if I had seen him first The two alternative methods to operating are the use of an antispasmodic drug, which might do away with the necessity of operation, and the use of the suction-pressure apparatus, which should be supplementary

Dr Halbersleben How about occlusion of the brachial artery? In those cases are you as anxious to operate at once?

Dr O'Neil In any acute arterial occlusion I prefer to operate and the sooner the better, although this applies equally well to any therapeutic procedure that is carried out An operation performed six or seven hours after the initial lesion does little, if any, good I think we ascribe success to the suction-pressure therapy which it probably does not deserve because a good many of these emboli disseminate themselves or break up with relaxation of the spasm due to alcohol or drugs If there is a block of a main vessel I prefer to go ahead and do an embolectomy

Clinical Diagnoses

Multiple emboli
Rheumatic heart disease, inactive, with fibrillation

Dr O'Neil's Diagnoses

Old rheumatic heart disease
Emboli to bifurcations of left popliteal artery and of right common iliac artery
Pulmonary edema
Pneumonia

Anatomical Diagnoses

Old rheumatic endocarditis of mitral valve with stenosis
Mural thrombus, left auricle
Embolic occlusion of right common iliac artery and left popliteal artery
Thrombosis of left popliteal vein and right external iliac vein and tributaries
Marantic endocarditis, mitral valve
Recent infarcts of lungs and infarction of right kidney
Old infarct of spleen
Chronic passive congestion lungs, liver and spleen
Surgical absence of right leg

Pathological Discussion

Dr J Beach Hazard I think Dr O'Neil has described the main pathologic changes about as accurately as we found them at autopsy The right common iliac and the left popliteal arteries were filled with clot The intestines were negative, and there was no obstruction in the superior

mesenteric artery The urinary findings presented a problem when the patient came into the hospital. The explanation of this was extensive infarction of the right kidney due to occlusion of large branches of the renal artery Examination of the brain revealed no anatomic lesion The heart was enlarged and the mitral valve of "fish mouth" type A large mural thrombus was present in the left auricle The lungs showed multiple infarcts, though at autopsy no thrombi were found in the right auricle The cause of the jaundice was not apparent

Dr. James A Halsted Could jaundice have been accounted for by the pulmonary emboli?

Dr. Hazard Yes, but the jaundice had cleared up before death, the icteric index was 10 at the last finding

Dr Edward L. Young At what icteric index does slight clinical icterus develop?

Dr. Hazard The range of latent jaundice without clinical signs is 6 to 15, but I have on occasions seen higher values than these without detectable icterus

Dr Halsted Were there any signs of cardiac failure?

Dr Hazard There was chronic passive congestion

REPORT ON MEDICAL PROGRESS

KIDNEY DISEASE

Reginald Fitz M.D.*

BOSTON

IN THE spring of 1937 of the Class of 1912 of the Harvard Medical School celebrated its twenty fifth anniversary Dr Henry A Christian[1] gave a clinical lecture in which he rediscussed the general subject of nephritis for the benefit of his former students, contrasting present-day views with those held a quarter of a century ago

Certain aspects of the nephritis problem are as old as the hills The classification of the disease, for instance, will probably remain substantially unchanged We recognize various forms of acute and chronic nephritis but as Dr Christian said, while possibly we now find it more fashionable to speak of chronic glomerular or chronic vascular nephritis than to speak of chronic parenchymatous or chronic interstitial nephritis as we used to the character of these diseases remains the same.

Dr Christian's paper is particularly stimulating because it shows so well how slowly clinical knowledge advances, and what a lag there is apt to be between new physiological concepts of disease on the one hand and their clinical application on the other As an example of this he quoted Starling's work It was in 1896 that Starling described the relation of the osmotic pressure of proteins to the fluid exchange between blood vessels and tissue spaces, pointing out that if the albumin content of the plasma was decreased osmotic pressure changed and the fluid exuded from the vessels faster than it was taken up by the veins It was ten years before clinicians realized the importance of this physiological idea and another ten years before they began to apply it to clinical work In view of such clinical conservatism, it is surprising that anything new of importance should be turned up in connection with so old and well plowed a field as that of Bright's disease Yet new ideas regarding nephritis do appear from time to time, and some of them may be of value in practical therapy

By all odds the most impressive single advance recently made in our clinical concept of Bright's disease has been due to Goldblatt[2] and his coworkers In 1932 they began an attempt to produce hypertension experimentally The method which they employed was an ingenious one they studied the effect in animals of renal ischemia brought about by clamping the main renal artery with various degrees of constriction From their early experiments they concluded that such renal ischemia at least in dogs, did produce a persistently elevated blood pressure, and they found that almost complete constriction of both main renal arteries eventually resulted in great elevation of blood pressure, which was finally complicated by severe disturbance of renal function and uremia They carried forward these observations confirmed them in other species of animals and saw them in turn confirmed by other workers, until today the "Goldblatt animal" is

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familiar to all who are engaged in the field of experimental medicine

As these things go, in a surprisingly short time after Goldblatt's early papers were published clinicians began to recognize "Goldblatt human beings" In other words, isolated cases began to be described in which hypertension appeared to be done away with by the removal of a unilateral renal lesion which had produced renal ischemia, cases, for example, of unilateral atrophic kidney due to a congenital anomaly of the renal artery as a result of which there had developed a true one-sided renal ischemia Individuals such as these with hypertension are worth looking for If they can be recognized and properly treated, they may form a group in which hypertension can be cured by a simple, direct surgical approach

Interest in the surgical treatment of hypertension by sympathectomy has developed in recent years Possibly its interest now is more acute than ever before because of Goldblatt's work

It has been shown in animals that sympathectomy does not modify the hypertension resulting from experimental renal ischemia In man too, this appears to be true At the Robert Dawson Evans Memorial we have had a patient with hypertension treated by sympathectomy in whom the operation had no effect on the blood-pressure level Later a one-sided atrophic kidney was removed and the blood pressure promptly fell to normal Thus it appears that if sympathectomy is to be considered, accurate diagnosis is essential If one is dealing with a "Goldblatt man," nephrectomy rather than sympathectomy is indicated if any form of surgery is in contemplation

The present status of sympathetic-nervous-system surgery in relation to hypertension is not altogether clear Among other workers in the field, Smithwick[3] has quite well demonstrated that significant blood-pressure changes may follow extensive sympathetic denervation, and that a lowering of the blood-pressure level may result from such operative procedures without harm to any organ or tissues of the body, and with relief from the distressing symptoms which may result from high blood-pressure levels This effect is more than temporary, for many patients with abnormal blood-pressure levels have been continuously benefited from two to six years after operation The best results obtainable from this approach occur in young patients with varying degrees of hypertension but with minimal evidence of organic changes in the eyegrounds, heart or kidneys Unfortunately, even in such cases the results of surgery are not uniform In hypertensive patients with advanced organic vascular changes, material lowering of the blood-pressure level by sympathetic surgery is to be expected but rarely

On the whole, the surgical attack on hypertension by this method must still be regarded as in the experimental stage It will take more experience to determine the most effective method of denervating any portion of the vascular bed Further observations on the late results of treatment will be necessary in order to determine the indications for and the true value of sympathetic surgery in hypertension There appear, however, to be enough encouraging results in carefully selected cases to justify further exploration by this means

Massie, Ethridge and O'Hare[4] have recently revivified interest in the thiocyanate therapy of vascular hypertension In 1925 this drug was introduced by Nichols for the purpose of lowering blood pressure, and during the following decade there appeared many articles dealing with its therapeutic usefulness Some authors reported favorable results, others believed that the drug was ineffectual, or that its toxic effects were so frequently encountered and so dangerous as to interfere seriously with its administration

In 1936 Barker introduced a method for blood cyanate determinations and cyanate clearance tests in patients who were in need of the drug His studies brought out two important and closely related facts First he showed that the various reactions to the drug in different individuals were due in large measure to variations in ability to clear the blood stream of cyanate Secondly, he demonstrated that by using as a control the level of cyanate in the blood he could regulate the dose accurately, largely avoid toxicity and often obtain a significant lowering of blood pressure He concluded that the optimal therapeutic level of blood cyanate ranged between 8 and 12 mg per 100 cc. Provided that dosage was regulated in this manner he considered thiocyanate administration a safe and effective treatment for selected cases of hypertension

Massie, Ethridge and O'Hare agree with Barker They believe that thiocyanate constitutes a useful drug for the treatment of uncomplicated vascular hypertension in certain cases, provided the dosage is scientifically controlled by means of blood cyanate determinations In the 14 cases which are the basis for their report, the dosage of thiocyanate was always gauged by the blood-cyanate concentration, the optimal level apparently ranging between 5 and 7 mg per 100 cc The daily amount of sodium thiocyanate required to maintain this level varied in different patients A lowering of blood pressure was obtained in every case, the average fall in blood pressure in each case ranged from 66 to 21 mm systolic and from 33 to 8 mm diastolic Marked symptomatic relief, especially in headaches, nervousness and vertigo, was ob-

tained in 12 of the 14 patients Toxic symptoms were not often encountered, and these consisted merely of occasional episodes of transient weakness or infrequent attacks of mild epigastric distress On the whole, the results of these investigators appear to be promising

Finally, it must be remembered that occasional cases of paroxysmal hypertension have been described as being due to a tumor of the adrenal medulla, the removal of which has brought about a dramatic cure.

Thus at the present moment the management of hypertension is of greater clinical importance than ever before When faced with a patient, who has persistent hypertension, one must now make sure that there is no adrenal tumor or no unilateral renal lesion producing ischemia, and one may properly ask whether the patient is likely to be benefited by a sympathectomy or by the use of a drug such as thiocyanate In addition, one must not forget the knowledge that is already established regarding the management of hypertension he must bear in mind the importance of a well-regulated life, of common sense, of weight control, of digitalis, and of the fact that hypertension may for years be a benign, harmless condition which is best treated by being severely left alone

Along with increasing interest in the treatment of hypertension there has developed an interesting change in viewpoint regarding the essential pathology of many cases of chronic Bright's disease with high blood pressure

Weiss and Parker[5] have recently analyzed 100 selected cases of pyelonephritis encountered in the Mallory Institute of the Boston City Hospital. They emphasize the importance of pyelonephritis in relation to chronic nephritis they point out that the clinical course of pyelonepbritis is strikingly variable, the renal infection often healing in a short time, although it may persist for years, during which time activity may be continuous or recurrent They say that pyelitis practically never exists unaccompanied by pyelonephritis and more important still they conclude that pyelonephritis is responsible for between 15 and 20 per cent of the cases of malignant hypertension

Pyelonephritis, therefore, must now be regarded as a very significant disease, for it is one renal disease which can be treated effectively in its incipient stage It is worth remembering that a simple attack of acute pyelitis may be the beginning of chronic pyelonephritis with hypertension Treatment must be instituted early, and no longer should pyelitis be regarded as a simple minor infection not requiring particularly careful supervision All cases should be treated actively in the acute stage with the idea of preventing the future development of chronic pyelonephritic lesions The adequate treatment of acute pyelitis may be regarded as an important preventive measure against the subsequent development of a very common and hopeless form of chronic Bright's disease.

In the *Journal* for December 8, 1938, appeared an editorial entitled Transfusion of Incompatible Blood This was written in response to a letter by Dr William Dameshek, published in the same issue, in which he commented on the fact that blood typing preliminary to transfusion carries with it a definite sense of responsibility and can never be done too carefully As is well known, the transfusion of incompatible blood in man may be immediately followed by chills, fever nausea and vomiting, acute pains in the muscles, dyspnea and a feeling of constriction in the chest Signs of hemolysis may develop within a few hours. These include hemoglobinemia hemoglobinuria and jaundice. If a relatively small amount of blood is hemolyzed, hemoglobinuria and jaundice may not be evident The patient may recover, with nothing more serious than the loss of the transfused erythrocytes and consequent hemoglobinuria for several days In some cases, however, the sequelae are grave the urinary excretion is diminished or ceases entirely, the products of nitrogen metabolism increase rapidly in the blood, vomiting continues and generalized edema sometimes appears, coma gradually supervenes and the patient dies with the usual signs of uremia

A paper of De Gowin, Warner, and Randall[6] is of practical importance in connection with this matter These workers studied renal insufficiency in dogs produced by transfusion of canine hemoglobin, and showed that, when the urine was acid, death resulted from renal insufficiency Obstruction of the renal tubules by hemoglobin pigment sufficient to be the chief cause of the renal insufficiency was observed in most dogs under the experimental conditions outlined A study of the kidneys of 9 human beings who died of renal insufficiency after hemolysis of transfused blood revealed ao extensive precipitation of hemoglobin pigment in the tubules They suggest that this might be prevented by alkalinizing the urine prior to transfusion The practical importance of such a suggestion is very obvious with transfusions being done as commonly as they are at the present moment

Garvin and Van Wezel[7] have drawn attention to a peculiar form of kidney disease with which most clinicians are not familiar—bilateral cortical necrosis It is rare fortunately but very striking In such cases both kidneys are affected the necrotic cortex appears reddish yellow and soft, and closely

resembles a fresh infarct However, the involved area has the shape not of an infarct but of a portion of cortex, even to the point of involving the columns of Bertin

The etiology of bilateral cortical necrosis has been the subject of much investigation So far as can be determined, the condition affects previously normal kidneys, and in the majority of cases there has been the preceding complication of pregnancy, often associated with antepartum hemorrhage The clinical picture is fairly characteristic the onset is acute, the paramount symptom is anuria, of less diagnostic importance are headache, nausea and vomiting, epigastric pain and occasionally edema and convulsions The urine, if any is passed, contains albumin and casts, and occasionally blood and pus The blood pressure is likely to remain normal, there is retention of nitrogenous products in the blood, the condition is almost always fatal A few cases with recovery have been reported The customary treatment consists of the intravenous administration of dextrose and the forcing of fluids

Garvin and Van Wezel have described 3 fatal cases which were encountered in the Cleveland City Hospital in the past four years These are of particular interest because they were not associated with pregnancy and because in each case in addition to cortical necrosis of the kidney there was marked central necrosis of the liver

In brief, cortical necrosis of the kidney appears to be a renal condition worth emphasizing It represents an unusual complication of pregnancy, dramatic in onset and recognizable only if the disease is considered

Albright,[8] at the Massachusetts General Hospital, has made interesting studies concerning renal stones and their formation Most kidney stones are composed of cystine, uric acid, calcium phosphate or calcium oxalate In general, in the prophylactic management of patients with renal calculi, fluids should be forced Then, depending on the chemical composition of the stone, the urine should be kept either alkaline or acid For example, Albright suggests that when cystine and uric acid stones occur the urine should be kep alkaline, while in the presence of phosphate stone an attempt should be made to render the urin acid with an acid-ash diet and ammonium chloride On the other hand, with calcium oxalate stone neither acid nor alkali therapy is indicated Finally, calcium phosphate stones may be due to hyper parathyroidism, and in such cases eradication o the underlying disease is the method of cure

It is interesting to realize how much more i known concerning kidney stones and their forma tion than was known even a few years ago Al bright now says that when a patient asks whethe his stone can be dissolved, the question must no be regarded too lightly Perhaps the time is no far off when it will be entirely possible to dissolv renal stones in vivo as well as in vitro

Finally, when nowadays one thinks of medica progress, the universal clinical use of sulfanila mide or its kin comes to mind At the variou symposiums which have been held during th past year and at which sulfapyridine has been dis cussed, someone familiar with the matter was al most certain to tell the audience that this dru may be precipitated in the ureters or pelves, an thereby may produce albuminuria or hematuria I is not known what may be the end result of rena irritation induced in this manner, probably th effect is transitory and of no importance But a least it is worth bearing in mind that sulfapyri dine may have a toxic effect on the kidney, an that the urine along with the blood and the pa tient must be carefully watched while the dru is being administered

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CASE RECORDS OF THE MASSACHUSETTS GENERAL HOSPITAL

Antemortem and Postmortem Records as Used in Weekly Clinicopathological Exercises

founded by richard c. cabot m.d.

Tracy B. Mallory, M.D., *Editor*

CASE 25301

Presentation of Case

A fifty year-old housewife was admitted on the orthopedic service complaining of pain and stiffness in the joints of the hands and legs.

The patient had been fairly well until six years before admission when she began to have pain, swelling and stiffness of the joints of both hands. These symptoms increased slowly and she began to complain of pain and stiffness in the joints of the hands, legs and feet. She apparently suffered temporary relapses and remissions until one year before entry when she grew progressively worse. Four months before admission she became unable to walk. She had led an invalid existence since that time. One year before entry she had congestion in one or both eyes, and then developed unequal pupils, which persisted. She entered the hospital for the relief of joint pain and for the correction of flexion deformities of both knees.

The patient stated that she had had a "tiny" murmur in her heart for many years and had suffered "rheumatism" following a pregnancy twenty years before admission. Following this she had noted some shortness of breath on exertion and had had high blood pressure.

The marital and family histories were not contributory. The patient had had no cough, palpitation, angina or sputum. Her appetite had always been rather poor, but she had suffered no weight loss.

Physical examination revealed a well-developed and nourished woman in no apparent acute distress. There was a prominent flexion deformity of 90 degrees in the right knee. The examination on admission was otherwise negative.

Examination of the blood showed a red-cell count of 5,100,000 with 95 per cent hemoglobin, and a white-cell count of 19,200 with 82 per cent polymorphonuclears, 5 per cent lymphocytes, 5 per cent monocytes, 6 per cent eosinophils and 1 per cent basophils. The urine showed an acid reaction with specific gravity of 1.011 and 2 white blood cells and 4 epithelial cells per high-power field in the sediment; there was no albumin or sugar. The blood Hinton test was negative. The blood sedimentation rate for fifteen minutes was 2 mm., thirty minutes 8 mm., forty-five minutes 14 mm., and sixty minutes 19 mm.

At 12.30 a.m. on the third hospital day the patient suddenly developed an attack of rapid palpitation with left chest pain, not relieved by nitroglycerin. She became ashen, perspired freely, and when first seen by a house officer, was sitting on the edge of the bed, moving around freely, slightly cyanotic, with cold and moist extremities. The apex rate was 180 beats per minute and regular. It was not affected by carotid sinus pressure. An electrocardiogram showed a ventricular rate of 100, with a P-R interval of 0.20 second, normal rhythm, marked left axis deviation and inversion and slight widening of QRS_2 and QRS_3.

On the morning of the sixth hospital day the patient suddenly had severe dyspnea and clenched her teeth. The eyes became fixed and the patient became unconscious and cyanotic. The pulse was 130 and regular. The blood pressure was 100 systolic, 60 diastolic, during or just after the attack which lasted thirty seconds. Examination of the heart revealed a loud systolic blow with gallop rhythm and an amphoric A$_2$. Following this episode the patient seemed fairly well and posterior splints were applied to the legs to correct the flexion deformity. On the fourteenth hospital day her splints were removed because of pain in the legs. Examination of the heart at that time revealed that it was enlarged. There was a loud systolic blow and gallop rhythm with an amphoric A$_2$. The blood pressure was 130 systolic, 80 diastolic. On the nineteenth day examination of the heart revealed a loud blowing systolic murmur which replaced the first sound, gallop rhythm, and a short apical musical diastolic murmur which replaced the second sound. She developed attacks of dyspnea and medium coarse rales were heard over both bases to the angle of the scapulas. On the twenty-first day an electrocardiogram revealed a ventricular rate of 90 and an auricular rate of 90 with normal rhythm. The P-R interval was 0.20 second. There was slight inversion of T_1 and T_4. There was considerable left axis deviation and a slightly wide S.

On the twenty-seventh hospital day the patient became anuric for twenty-four hours and displayed Cheyne-Stokes respirations. The blood pressure was 120 systolic, 90 diastolic. The rhythm was rapid and regular at 110 beats a minute. There was pallor but no cyanosis. Examination of the abdomen revealed slight shifting dullness. The liver edge was not felt. The following day she became cyanotic, vomited, and voided once. The liver edge was palpated. She rapidly failed and died.

Differential Diagnosis

Dr. Edward F Bland We are presented here with a fifty-year-old housewife who entered the hospital with chronic arthritis of some six years' duration Otherwise according to the admission note she seemed fairly well After three alarming episodes in the hospital, the first involving the heart, the second the brain and the third the kidneys, she gradually failed, and died approximately four weeks after entry

In regard to her arthritis, the cause of her hospitalization on the orthopedic service, it seems reasonably clear that one is dealing here with the rheumatoid type This conclusion is supported by the duration of her disease and the joints involved, especially those of the hands, I presume the wrists were also affected, although it is not so stated Furthermore, the development of flexion deformities is most unusual with arthritis of other than the rheumatoid type Finally, concerning the eye changes, we know that in rheumatoid arthritis episcleritis is fairly common, and although iritis is somewhat less common, it does occur, so I assume that this patient had had iritis in the past, with some deformity of the pupils thereafter

We are told that the physical examination on admission to the hospital was normal except for flexion deformities of the knees One wonders about that statement for several reasons First, in view of the duration and extent of her arthritis there must have been chronic changes in joints other than the knees Furthermore, mention is made elsewhere of hypertension and a heart murmur in the past, and we find in the first electrocardiogram marked left-axis deviation Axis deviation of this order does not ordinarily occur in a short period of time but is the result of longstanding strain on the left ventricle, usually from hypertension or aortic valve disease It is possible that this patient may have had a considerably elevated blood pressure in the past which may have slowly declined with her enforced inactivity in recent years I wonder if there is a note giving the admission blood pressure

Dr Tracy B Mallory I cannot find it

Dr Bland We come next to the first and only account of a blood examination, which is almost normal except for a leukocytosis of 19,000, this disturbs me somewhat It is a little too high for uncomplicated rheumatoid arthritis Since nothing further is said about it and the patient appeared otherwise well at the time of admission, I am forced with some reservation to discard this finding for the moment

There is another finding here which lends some support to my belief that we had better not rely too much on this single white count the blood sedimentation rate was within the normal range I should also like to know if she had fever, but it is interesting that no comment is made about the temperature either here or later

Dr Mallory The temperature was normal

Dr Bland The next interesting thing about the blood examination is the 6 per cent eosinophilia which is not high but a little higher than one ordinarily encounters It is true that patients with rheumatoid arthritis at times run a mild eosinophilia I think the arthritic clinic here has encountered an eosinophilia as high as 30 per cent without obvious explanation other than that the patient was suffering from rheumatoid arthritis

The urine seemed to be all right, with the specific gravity perhaps a trifle low

The first of a series of serious episodes occurred on the third hospital day at 12.30 at night, without obvious cause and without preceding cardiac symptoms It consisted of rapid palpitation,—too rapid I think for a sinus tachycardia,—which makes me suspect that perhaps there was in progress at this time a tachycardia of ectopic origin, either auricular or ventricular In general both are regular, but with experience one can occasionally detect on auscultation a slight irregularity with ventricular tachycardia This slight tendency to irregularity with ventricular tachycardia can be observed more often in the electrocardiogram than recognized clinically Fundamentally both types of ectopic tachycardia are regular

Another prominent feature of this attack was "pain in the left chest" It would be helpful to know more about it It apparently suggested heart pain because they tried nitroglycerin, without relief The patient was in acute distress and in moderate shock How long the attack lasted we do not know It occurred in the early morning hours, and it usually takes some time for the house officer to arrive, however, he was able to make the above observations so I think it is fair to assume that the acute attack lasted at least fifteen minutes, possibly an hour or two The electrocardiogram mentioned thereafter was almost certainly not taken until the following morning, some eight hours or more after the onset of this acute nocturnal episode It showed evidence of rather marked left ventricular strain, which had presumably been present for some time There was some evidence of coronary disease on the basis of the widening of the QRS complexes The QRS complexes in Leads 2 and 3 were inverted That means more than moderate left-axis deviation and makes us suspect early intraventricular block It is evident then that the electrocardiogram was abnormal, but no comment is made at this time about the T waves It may have been

too early for the changes characteristic of acute myocardial infarction to have appeared, and besides the patient may not have had actual infarction of the heart the previous night, although a subsequent electrocardiogram and the clinical course strongly suggest it. What was the explanation of that attack then? We see patients of middle age or older with coronary disease who have angina pectoris during the course of paroxysmal auricular (or ventricular) tachycardia. It represents a "status anginosus" usually for the duration of the rapid heart action, dependent on underlying coronary disease plus a diminished output of the heart at the rapid rate. Whether this was only an attack of paroxysmal tachycardia with associated coronary pain or whether the patient actually had coronary occlusion or myocardial infarction we shall have to leave open for the moment. The subsequent course as previously noted, strongly suggests that some permanent damage occurred in the myocardium at the time of this acute attack. It would be helpful at this point to know if the patient developed fever thereafter, if the blood pressure dropped or if there was a leukocytosis.

She apparently was not in too bad a condition the next day but on the third day thereafter she had a second, rather alarming episode. This time she suddenly lost consciousness for thirty seconds and an associated tachycardia of 130 was noted. Following this she again seemed to be all right without residual neurologic changes. There are one or two possible explanations for this cerebral episode. It would seem to indicate a transient cerebral anemia, I should say, rather than structural damage to the brain. It lasted only thirty seconds, with no residual signs thereafter. What might do that? Cerebral anemia secondary to disturbed cardiac output seems most likely. The pulse was regular at 130. That rate suggests that the patient may have had another paroxysm of tachycardia, perhaps (but not probably) associated with a short period of ventricular fibrillation. High grade heart block seems unlikely in view of the observed heart rate. I believe that this episode probably was not caused by an embolus. I cannot account for it on any other basis than that of a transient cerebral anemia.

We are then told that the blood pressure was considerably lower with a diastolic reading of 60 and for the first time we find a comment on certain physical signs indicative of serious heart disease. The heart was enlarged. A loud blowing systolic murmur developed or at least became more prominent. It was thought that she had a slight systolic murmur in the past, but this was not commented on at admission. Dilatation of the heart alone may produce a fairly loud apical systolic murmur. In addition to the signs of enlargement there was present a gallop rhythm, which is reliable evidence at this age of serious myocardial weakness. The amphoric A suggests one of three things: hypertension over a long period of time, marked aortic atherosclerosis without hypertension or as is thought by some, early syphilitic aortitis. With a negative Hinton test and no other suggestive evidence of syphilis, except possibly the pupils, I am willing to discard syphilitic aortitis from further consideration.

The next event which requires a passing comment was the pain in the legs following the use of splints which I assume was due to the splints. No fever, no local tenderness and no swelling are mentioned. Therefore it is unlikely that this patient was developing a phlebitis, although in view of the lung signs later observed we must keep this possibility in mind. Examination of the heart at this time confirmed what had previously been noted with one additional finding which is somewhat confusing—a short musical diastolic murmur which replaced the second sound. Ordinarily diastolic murmurs are not musical. They are usually blowing in character if of aortic or pulmonary origin and best heard at the base of the heart and rumbling if of mitral origin and ordinarily best heard at the apex. It is unusual to hear an early diastolic murmur which replaces the second sound and yet is not audible at the base, because the murmur arises in association with either A_2 or P_2. Occasionally an aortic diastolic murmur may be heard better toward the apex than elsewhere, but this is exceptional, and finally, when a diastolic murmur is heard at the apex, if we are uncertain about its origin and character, in the long run I think it most likely arises at the mitral orifice.

DR. MALLORY. For what it is worth to you, Dr. Bland, the initial physical examination when the heart was described as negative, was done by a house officer. Dr. Howard B. Sprague heard a gallop rhythm and systolic murmur. Dr. Maurice Fremont-Smith described the systolic and diastolic murmurs at the last episode.

DR. BLAND. We are left somewhat in a dilemma. Did the cardiac murmurs actually appear under observation or were they present and not mentioned at the time of admission? It makes a considerable difference which alternative we accept. We know that functional diastolic murmurs may arise during the course of cardiac dilatation, especially in children. This is certainly less common in older people, and I suppose it is safer to assume that this patient had slight scarring of the mitral valve dating back to childhood. Marked dilatation and weakness of the myocardium may

have produced a functional diastolic murmur at the cardiac apex or it may have been of aortic origin after all The most important consideration, however, is that we have clear evidence of serious myocardial weakness manifested by the gallop rhythm and actual failure as shown by the dyspnea and medium coarse rales heard at both lung bases as high as the scapulas I suppose we should also keep in mind pulmonary infarction, but the bilateral and basal distribution of the rales and the absence of fever in the face of clear evidence of serious weakness of the heart make this less likely than left ventricular failure

The blood pressure had been rising a little, and then the patient suddenly developed complete anuria for twenty-four hours That is a little difficult to explain Dr E Ross Mintz has recently reviewed the experience at this hospital in connection with infarction of the kidney The majority of renal infarcts are painless, and I asked him the other day if it were possible to have a complete suppression of urine from a renal infarct without pain Such has been encountered Another interesting point, according to Dr Mintz, is that although most renal infarcts are associated with hematuria, the absence of hematuria does not necessarily exclude renal infarction It does not seem likely that the patient's blood pressure was low enough to cause a cessation of renal function on that score alone The diastolic pressure shortly thereafter was very good, and at no time when it had been recorded was it alarmingly low I remain at somewhat of a loss to explain this acute anuria for twenty-four hours, unless it may have been secondary to renal infarction Nothing is said about the findings in the urine and the blood thereafter, but the sequence of events suggests a slowly progressive left ventricular heart failure with probably a terminal element of renal failure

From the general course of this patient's fatal illness it seems to me there are one or two things of which we can be reasonably certain and a few things about which we may raise a question There seems no doubt about the chronic arthritis probably of the rheumatoid type Secondly, I think the evidence is sufficiently clear that the patient had hypertensive and coronary heart disease with congestive failure, chiefly of the left ventricle with probably a recent myocardial infarct I should like to raise the question also as to whether this patient may have had slight mitral regurgitation of long standing, dating back to rheumatic fever in childhood, but perhaps not contributing significantly to the terminal illness There was considerable uncertainty concerning the diastolic murmur, but there may also have been slight rheumatic scarring of the aortic valve, if present I do not believe that it contributed significantly to the terminal events Finally, one wonders if this patient also had slight chronic vascular nephritis, with possibly renal infarction

Dr Joseph S Barr Before her entry to the hospital I saw this patient with Dr Fremont Smith with regard to the possibility of doing something about the arthritis She had been a wheel-chair invalid for months, perhaps for a year or more She had definite rheumatoid arthritis The physical examination on admission is deficient because this disease was easily recognizable Both knees, ankles, wrists and hands showed the typical fusiform joint swellings of proliferative arthritis She was deaf and without her hearing aid could not hear at all, so it was difficult to get a history She was a frail little person and I was not sure whether we could do anything for the arthritis but advised hospitalization for study to see what could be done Between that time and her entry to the hospital she became worse, so that on admission it was obvious that the joints were secondary and the medical condition primary After a hospital stay of two weeks I gave up an serious effort toward straightening the joints and she was transferred to the medical service

Clinical Diagnoses

Rheumatic and hypertensive heart disease
Angina pectoris
Atrophic arthritis

Dr Bland's Diagnoses

Rheumatoid arthritis
Hypertensive and coronary heart disease
Myocardial infarction
Congestive heart failure, chiefly left ventricular
Slight rheumatic heart disease with slight mitral and aortic regurgitation?
Vascular nephritis?
Renal infarction?

Anatomical Diagnoses

Coronary thrombosis, old
Cardiac infarction, old and recent
Endocarditis, chronic rheumatic, with stenosis mitral and aortic
Rheumatoid arthritis
Arteriosclerosis, moderate aortic and coronary
Hydrothorax, slight, bilateral
Chronic passive congestion of liver and kidneys

Pathological Discussion

Dr Mallory The postmortem examination showed besides the generalized evidence of rheumatoid arthritis a group of cardiac lesions Sl

did have old scarring of both mitral and aortic valves without however, any marked degree of stenosis or insufficiency but it was unquestionably a rheumatic lesion The most important finding was an area of fresh infarction at the apex and a somewhat larger adjacent area of quite old infarction overlaid by heavy fibrous scarring which must have dated back months and possibly years The descending branch of the left coronary artery was completely occluded with a fairly old thrombus, and we did not succeed in identifying any fresh thrombus to go with the recent infarct That does not mean that it was not there In cases of long standing complete stenosis of a coronary artery, extensive collateral circulation develops and the thrombi must often be sought in unusual spots, so that unless one injects the heart they are easily missed The kidneys were completely negative except for minimal vascular lesions Nothing was found which would explain the anuria The brain was grossly negative and if there was an embolus, it must have been an extremely minute one which had not caused any recognizable softening

A PHYSICIAN Was there any pulmonary infarction?

DR MALLORY No

CASE 25302

PRESENTATION OF CASE

First Admission A twenty year-old single Canadian was admitted complaining of right sided headaches.

For three months before admission the patient suffered from intermittent headaches over the right side of his head accompanied by a right nasal discharge. Three weeks before entry following an attack of coryza, he suffered from violent pains in the right side of his face His nose was markedly obstructed, and there was a discharge of yellow pus. This was soon followed by severe generalized headaches Ten days before entry he had projectile vomiting without nausea and had two more attacks of vomiting before admission His nasal discharge continued Right nasal polyps were removed two days before entry His past and family histories were noncontributory

Physical examination showed a well-developed and nourished man in no acute discomfort There was yellow purulent material in the middle nasal meatus, and the right middle turbinate was polypoid the septum was markedly deviated to the right None of the sinuses on the right would transilluminate Those on the left transilluminated well There was tenderness along the floor of the right frontal sinus The pupils reacted sluggishly to light and not at all to accommodation There was a limitation of upward ocular motion The optic disks were blurred and elevated the veins somewhat distended there was less than 1 diopter of papilledema A portable perimeter showed constriction of the upper fields The ears were negative. There was a stiff neck, and bilateral positive Kernigs The patellar reflexes were both very brisk, the ankle jerks normal There was no Babinski sign

The temperature was 97.4°F., the pulse 72, and the respirations 20

Examination of the urine was negative. The blood showed a hemoglobin of 90 per cent, and a white-cell count of 9300 with 64 per cent polymorphonuclears A blood Hinton test was negative A lumbar puncture gave an initial pressure of 300 mm of water The spinal fluid contained 121 cells (11 polymorphonuclears and 110 lymphocytes) per cubic millimeter and had a total protein of 148 mg per 100 cc., a sugar of 59 mg., a 4444455553 gold-sol curve and a negative Wassermann test Several spinal fluid cultures showed no growth

An x ray film of the skull showed very slight separation of the sutures There was considerable calcification in the pineal region

On the day of admission the floor of the right frontal sinus was removed, and all the ethmoid cells taken out The frontal sinus contained thick yellow pus under pressure, and the ethmoids were filled with a thick dark mucous membrane On the third hospital day the patient had projectile vomiting Each fundus showed 2 diopters of papilledema Associated ocular movements above the horizontal were absent, although he could raise the left eye upward alone The pulse was 48, the respirations 12, and the temperature 98.6°F The right frontal lobe was explored, this revealed a tense but otherwise normal dura A needle was inserted 5 cm in all directions but no resistance or pus was encountered On the sixth hospital day the patient was much improved Vomiting ceased there was no fever, and the pulse rose to 70 The neck however remained stiff and there was considerable bulging of the operative incision There was no leakage of cerebrospinal fluid The patient continued to improve on the ninth hospital day he had less than 1 diopter of papilledema and could look upward and the pupils reacted to light and accommodation During the next seven days he again developed signs of increasing intracranial pressure There was diplopia on looking to the left which increased on looking downward and to the left the right eye remaining higher and not moving so far to the left There were about 4 diopters of papilledema on the right less on the left A lumbar puncture on the nineteenth day showed an initial pressure

of 400 mm The fluid contained 12 white cells and 8 red cells per cubic millimeter, a total protein of 134 mg per 100 cc, a sugar of 54 mg and chlorides of 707 mg During the next four weeks he improved progressively and there were no further headaches or vomiting The papilledema reduced to 1 diopter or less He acted normally On the fortieth hospital day a lumbar puncture gave an initial pressure of 320 mm There were 35 lymphocytes per cubic millimeter, and a protein of 154 mg per 100 cc He was discharged on the forty-eighth hospital day

Second Admission (six months later) The patient's condition had been good, although he had had occasional attacks of diplopia and was somewhat nearsighted There had been no headaches or other central-nervous-system symptoms He had gained 43 pounds in weight

Examination was essentially negative except for nasal polyps and a deviated nasal septum His vision was 20/20 bilaterally

The septum was partially resected, and he was discharged on the tenth hospital day

Third Admission (two weeks later) One week after discharge he began having pains in the back of his head and neck, which caused him to draw up his hands and arms There were no real headaches, and he had not vomited

On physical examination the pupils were equal, dilated, and did not react to light There was a 1 5-cm pulsating hernia at the lower end of the old frontal operative scar The blood pressure was 120 systolic, 80 diastolic

The temperature was 97 5°F, the pulse 73, and the respirations 20

Examination of the urine was negative The blood showed 85 per cent hemoglobin, and a white-cell count of 9300

On the second hospital day the hernia was removed, and the skin edges sutured together On the sixteenth hospital day it was shown that diplopia on looking to the left and down was still present His recovery from the operation was uneventful, and he was discharged on the seventeenth hospital day

Final Admission (four months later) Two months before admission, following an automobile drive, he stopped suddenly on entering the house, turned his head far to the left, fell, and remained unconscious for twenty-five minutes He suffered no injury His limbs and body were extended and rigid, his eyes open and fixed straight ahead He bit his tongue and a clothespin was inserted in his mouth There was no incontinence Following the attack he felt well and did not remember the event. He remained well until eleven days before entry when a severe pain suddenly occurred in the back of his head behind the right ear The pain was very sharp but lasted only a few seconds He then had intermittent pain and buzzing in the right ear, as well as intermittent headaches until entry The pain in the ear was relieved by heat, but his headaches were only slightly relieved by aspirin and Anacin About twenty minutes after breakfast on the day before admission he vomited He had been drowsy for the previous ten days but had always been rational No further seizures had occurred He had continued to gain weight

Physical examination showed an obese man in acute distress from time to time because of pain in back of the head and neck Pains recurred every one to five minutes during the examination and lasted two to five seconds He cleared his throat occasionally, raising yellow blood-streaked sputum The eyes were at different levels, the right being lower than the left and showing an intraorbital fullness Tenderness was present over the occipital region, most marked over the right mastoid The ears showed no abnormality The blood pressure was 118 systolic, 80 diastolic On neurological examination the pupils were small, equal and did not react to light or accommodation There was a fine lateral nystagmus, and upward gaze was definitely limited, the left eye moving higher There was slight bilateral ptosis of the lids The disks were blurred No gross visual field defects could be discerned There was slight right facial weakness The finger-to-nose test was more hesitant and inaccurate on the right than the left The tendon reflexes were active and equal Bilateral Babinski signs were present There was unsustained ankle clonus bilaterally The remaining neurological examination was negative

The temperature was 100°F rectally, the pulse 71, and the respirations 25

Examination of the urine showed a trace of acetone but was otherwise negative The blood showed a red-cell count of 4,700,000 with 100 per cent hemoglobin, and a white-cell count of 12,200 with 85 per cent polymorphonuclears A lumbar puncture gave an initial pressure of 430 mm., and the final pressure after withdrawing 10 cc was 180 mm The fluid was clear and colorless There were 24 lymphocytes per cubic millimeter The total protein was 164 mg per 100 cc, the sugar 71 mg The gold-sol curve was 5555552110

X-ray films of the skull showed no evidence of osteomyelitis at the operative defect The sella turcica was increased in size, and there was marked erosion of the posterior clinoids and dorsum sellae. The pineal gland showed extensive calcification, and by measurement was displaced backward and downward

On the second hospital day a ventricular tap through the right frontal lobe resulted in the escape

of 50 cc. of clear fluid under high pressure at a depth of 3 cm.

After ventricular injection of air there was a large amount of air in the lateral and third ventricles. The ventricles were grossly dilated, the right lateral slightly more than the left. The third ventricle was dilated, and there was no evidence of air entering the aqueduct of Sylvius or fourth ventricle. On the fourth hospital day a Stookey operation was done; this exposed the chiasm, and a thin-walled third ventricle was opened. No definite lesion was found. Following the operation the temperature mounted to 106°F. and remained close to that level for forty-eight hours. A lumbar puncture on the fifth hospital day gave an initial pressure of 210 mm.; the fluid was slightly bloody. The temperature continued at 101 to 105°F.

On the fifteenth hospital day there were dullness and fine rales over the right base. Chest x-ray films showed the mediastinum shifted slightly toward the right. The right diaphragm was high, and there were linear areas of density extending from the hilus down to the posterior portion of the lower lobe. A lumbar puncture gave an initial pressure of 240 mm. The fluid was clear and xanthochromic. There were 92 red cells, 4 lymphocytes and 10 polymorphonuclears per cubic millimeter. The total protein was 124 mg. per 100 cc., and the chlorides 801 mg. He failed rapidly and died on the seventeenth hospital day.

Differential Diagnosis

Dr. Harry C. Solomon: I saw this case for a week before I went on vacation. The patient was referred from the Massachusetts Eye and Ear Infirmary with a story of intermittent headache prior to admission; he had a good deal of nasal discharge of yellow pus, almost exclusively from the right side of his nose. Before entry he had had projectile vomiting. When he came in the sinuses on the right side were quite obviously filled with pus. There were a number of signs indicating that he had an intracranial disorder. The first one was, of course, that there was some increase in intracranial pressure as shown by ophthalmological examination, however, the signs were not marked. He also had a stiff neck. Those factors taken together suggest that he had an extension of infection from the sinuses into the intracranial cavity. A striking neurological finding was that he had limitation of upward movement of the eyes; this suggests at once that he had something in the region of the third ventricle because that is the usual site of a lesion which produces this symptom. Examination of the body as a whole showed nothing else. A lumbar puncture confirmed what we have surmised from the projectile vomiting and elevated optic disks, namely, increased pressure (300 mm.). There were 121 cells per cubic millimeter. Adding together the sinus infection, the stiff neck, the cells in the spinal fluid, and the evidence of increased intracranial pressure we have very suggestive evidence for abscess. The high total protein and strong gold sol reaction go with such a diagnosis, as well as a sugar that was not particularly low. The sugar is important and makes meningitis relatively unlikely.

X-ray films of the skull gave no further evidence of importance, though the slight separation of the sutures suggests that the pressure had been elevated for a fairly long time. At that time there is no statement regarding displacement of the pineal gland to throw light on where the expanding lesion might be found. Despite the fact that there was limitation of upward motion of the eyes, which throws attention backward to the middle fossa and makes us wonder about extension of infection from the sphenoidal sinus, operation on the frontal sinus was performed; the posterior wall of the sinus was removed and nothing was found suggesting an abscess, even though the frontal lobe was quite well explored by needle. In the meantime things were progressing rapidly because the papilledema continued to increase markedly. There was a tense dura as further evidence of increased pressure.

Next, he began to develop diplopia on looking to the left side, a disturbance or paralysis of the right external rectus muscle, which might well be merely a pressure symptom. Further, lumbar puncture on the nineteenth day showed a pressure increased over what it was before,—400 mm. with 12 white cells—but for some reason he then began to improve. Despite the fact that the pressure remained high (320 mm.) and the fluid still showed 35 lymphocytes and a high protein, he was discharged at the end of forty-eight days, I believe without a definite diagnosis having been made, although I am not sure of that. At any rate no further operative procedure was undertaken and he went out relieved of symptoms. Whether that was in part because he had a small decompression one can only guess. Abscess will do that sort of thing—improve spontaneously—but so will tumor and so will a condition that we often call, for lack of a better term, pseudo-tumor, a condition of which no one knows the etiology but from which decompression gives relief.

He returned to the hospital six months later for some reason. During these six months he had been feeling well except for occasional attacks of diplopia evidencing that something was still going on and we wonder whether the whole thing was some odd form of encephalitic process with interference of outflow of cerebral fluid from the base

and increased pressure on that basis, together with some other vague encephalitic foci in various other places to give the symptoms he continued to have A striking fact is that in six months he gained 43 pounds in weight That suggests a metabolic disturbance and makes one think of something related to the pineal gland We have no previous note as to the location of the gland by x-ray, nor have we the report on this admission At any rate he had a resection of the septum and left the hospital on the tenth day

Two weeks later things happened He began to have pain in the back of his head and neck, which caused him to draw up his hands and arms We find that he had some herniation in the frontal region where a piece of the skull had been removed He still had diplopia on looking upward It was found he had disturbance of the visual fields Probably there was some loss of the upper portion of the fields and that is not readily explained A lesion around the geniculate ganglion might produce such a change, or a lesion in the floor of the anterior fossa pressing on both optic nerves, but it is not a good clinical symptom on which to rely, and for practical purposes the best thing to do is to forget it After the third admission he went out and got along well for two months, when he had a seizure in which his eyes and head turned to the left He probably had something in the way of cortical irritation, although the lesion may have been in the brain stem At any rate he had a convulsion and recovered Then he was better again for a while

Eleven days before his final entry to the hospital some new symptoms began He had severe pain in the back of his head behind the right ear, with intermittent buzzing as well as pain and generalized headaches That again is quite definite and implicates the eighth nerve On examination he was found to be having sharp paroxysmal pain occurring at intervals of one to five minutes and lasting two to five seconds That is hard to explain At any rate he still had what had been present more or less all the time — signs and symptoms that implicated the region of the middle fossa in the midbrain region His third nerve was definitely involved Once more the pupillary changes and inability to raise his eyes upward suggest something of a midbrain localization of the trouble

When he came in this last time there was lateral nystagmus, which might be a pontine disturbance There was a bilateral ptosis, again suggesting something in the neighborhood of the third nerve There was right facial weakness, suggesting brainstem involvement, and he had developed bilateral Kernig signs which also could be accounted for by new growth of one sort or another in the pontine midbrain region The spinal fluid pressure was still very high (430 mm), and on withdrawal of 10 cc it only dropped to 180 mm., suggesting a large reservoir of fluid from which to draw, so one suspects that he might have had a hydrocephalus There were 24 lymphocytes, a finding which again suggests irritation It might be abscess or tumor or cyst or something near the ventricular surface There was no evidence of osteomyelitis, and I think we have ample reason to forget the possibility of frontal abscess

The x-ray then began to show something that seemed to localize the lesion quite well The pineal gland was pressed backward and downward so that there seemed to be a lesion above and in front of it The sella turcica showed erosion of the posterior clinoids and dorsum, this again suggests something above and behind, therefore giving rise to the thought that the lesion lay somewhere in front of the pineal gland and behind the sella So we think of a disturbance around the aqueduct of Sylvius, above it and pressing down on it Then the ventricular tap showed marked hydrocephalus, a very thin cortex and large ventricles Air injection showed large ventricles, but no air going back of the third ventricle, which might be due to technical difficulties, as it is sometimes difficult in a ventricular air injection to get the air to go back as far as one wants On the other hand with marked dilatation everywhere else one still thinks that there was something behind the third ventricle that stopped it Of course that could be a ball-valve type of tumor in the region of the aqueduct of Sylvius or the posterior portion of the third ventricle, this would account for the remissions and then the new symptoms At any rate, apparently as a result of the ventriculogram an attempt was made to find the lesion in the third ventricle or posterior to it Therefore the ventricle was opened without, however, any success

The final thing that comes to our attention is the x-ray film of the chest in which the right diaphragm was high suggesting that there was something in the liver In actual practice in the hospital we should go down to the x-ray room and get a complete and usually satisfactory answer as to what that meant I do not know whether Dr Holmes is going to tell me what that really means

Dr A Thornton Scott The patient had a friction rub at the base at the axilla on the right, and two days before death the right leg was swollen

Dr George W Holmes I cannot add anything regarding the skull films I might expand a little on the question that has been raised about the chest The diaphragm is a little high on both

sides but more so on the right than on the left, and the angle between the diaphragm and the chest wall is obscured on that side I should suspect that the trouble was in the patient s chest rather than in the liver or below the diaphragm I cannot rule out the liver but it seems to me more likely that he had a pneumonic or pleuritic process in the chest rather than anything in the liver

Dr. Solomon Coming back to the head the lesion from the standpoint of localization was definitely back of the third ventricle. The problem is, What was it? I do not believe it was in the pineal gland itself because the gland was displaced So he had a lesion in that general region which apparently was an expanding one it was not an abscess, not inflammatory but may well have been a tuberculoma or glioma On the basis of possible liver enlargement I wondered whether we were dealing with some form of cyst perhaps one due to the echinococcus, but now the best that I am able to suggest is that he had a lesion behind the third ventricle in the midline pressing downward, probably either a tuberculoma or glioma, possibly a cystic lesion that occasionally grew smaller or larger giving different pressure effects

Dr. Henry R Viets Do you associate his difficulties at the time of the last entry with the first-admission symptoms of sinus infection and, possibly, meningeal irritation or abscess?

Dr Solomon No, I have discarded the idea of abscess, although that is still a possibility I think that the so-called meningeal irritation was due to increased pressure in that region

Dr. Gustave B Fred When I first saw the patient he complained of headache, vomiting stiff neck and a creamy discharge from his right nostril He did not have failure of upward gaze

X-ray studies presented evidence of a right frontal sinusitis Spinal puncture revealed increased pressure and high cell count For fear of an impending meningitis I performed an external right frontal sinus operation and found creamy pus with markedly thickened mucous membrane in the sinus. I left the incision wide open Two days later failure of upward gaze was noted and his other symptoms were aggravated I made a diagnosis of a brain abscess in the right frontal lobe which was confirmed by Dr James B Ayer I explored the right frontal lobe, but no abscess was found Later a consultation was held with Dr Ayer and Dr Charles S Kubik, and the question of pineal-body tumor was suggested I was on the verge of transferring the patient to the Neurosurgical Department for exploration when he suddenly became well, as I thought He was discharged home. The third and fourth admissions to the hospital were for plastic work on the original external incision, which had been left open at the time of the first operation I saw him a year after my original operation and advised admission to the hospital The last operation was done in the Neurosurgical Department

Clinical Diagnoses

Midbrain tumor
Pulmonary infarction

Dr. Solomon s Diagnosis

Midbrain tumor

Anatomical Diagnoses

Pinealoma
Internal hydrocephalus.
Thrombophlebitis, right femoral vein
Pulmonary infarction, bilateral
Obesity
Abdominal striae.
Operative wounds.

Pathological Discussion

Dr. Charles S Kubik There was, as Dr Solomon suspected a tumor of the midbrain This was a small infiltrating growth, measuring approximately 2 cm in diameter situated in the tegmen and extending forward to the region of the third nerve nuclei and practically obliterating the aqueduct The greater part of it was on the left side.

The tumor was a pinealoma. It was composed of large rounded polyhedral and elongated cells with well stained cytoplasm the nuclei containing strikingly large nucleoli Within the tumor and also the adjacent perivascular spaces and subarachnoid space there were lymphocytes and a fair number of plasma cells. This infiltration of the tumor with lymphoid cells is characteristic for this type of pinealoma, and the meningeal infiltration in this case probably accounts for the cells found in the cerebrospinal fluid during life

The opening into the third ventricle was patent providing a communication between the ventricles and the subarachnoid space. Comparing the post mortem findings with the encephalogram there seemed to be a considerable diminution in the size of the ventricles this indicates without much doubt that ventriculostomy had relieved the internal hydrocephalus

Dr. J H Means Is this type of tumor radiosensitive?

Dr Kubik I am not sure that the cases of pinealoma or suspected pinealoma responding to radiation have been checked by biopsy

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FACTUAL DATA

Two documents recently issued by the American Medical Association deserve more than casual attention from the many now interested in medical economics Those motor-minded individuals who have been annoyed by so many surveys will be pleased with the action presented in the one hundred and eighty-five page pamphlet issued by the Bureau of Medical Economics entitled *Organized Payments for Medical Services* The material on which this publication is based has been collected over a long period of time and includes data concerning all kinds of prepayment plans, from those of the fraternal organizations of years ago down through the most recently operated services sponsored by the Farm Security Administration and by various medical societies Commercial insurance companies alone now pay out approximately $300,000,000 annually in cash indemnities to assist in the payment of medical bills Reading this it would appear that no responsible person need go without an opportunity to budget his medical expenses The rare burden incurred by consecutive months of hospitalization is not so well provided for, however People may still be rendered destitute by certain types of injury or chronic disease, but this is a problem of economic circumstances rather than one concerning the provision of adequate medical service

The other publication, *Factual Data on Medical Economics,* is a graphic collection of information from reliable sources concerning physicians, populations, hospitals, community incomes and various ratios between these items Death rates in this and other countries and for various diseases are stated and charted with little more than a running description of text, and even this largely refrains from interpreting the data presented It is printed on sixty-eight pages, 8 by 11 inches in size, and contains twenty-five tables and twenty-nine charts The sort of information is given with which the medical profession is, or should be, familiar, but it is also in a form that the general public can readily understand Too often, popularized material sacrifices accuracy to ensure clarity, but in this booklet no such exchange of values has occurred With a heavier cover it would be suitable for, and would find many interested readers in, the doctor's waiting room It should be in the minds of all who contemplate future activity in the framing of legislative policies and acts

SYPHILIS AND THE LAW

The recent article by Stokes and Ingraham* on "Syphilis and the Law" emphasizes not only the new wave of legislation in the genitoinfectious disease field, but also the need for the co-operation and the influence of the physician in matters pertaining to this problem The authors point out that laws relating to the control of syphilis should

*Stokes J H and Ingraham N R Jr Syphilis and the law with a discussion of the false positive blood serologic test J A M A 112:1133-1143 1939

ake account of the great variability in individual ases and the necessity for expert medical inter pretation in many instances Any law should herefore be drawn in sufficiently general terms o allow for the exercise of individual expert medi al judgment as occasion arises They point out he fallacy of depending on a single test or proce dure without adequate control in the diagnosis of syphilis, and they discuss at length the false positive serological test and the numerous injus ices arising in the interpretation of such a test without adequate experience and qualifications

Numerous states have recently enacted laws con cerning the genitoinfectious diseases, with regard to marriage, blood donors, food handlers and other industrial groups Other states have similar laws under consideration Such laws are justly con cerned with revealing contagious syphilis, but it is a grave question as to the attitude which the courts will take when these laws begin to reveal, with reference to relatively prominent individuals, infections by diseases which are in no way trans missible. It is true that most legislation aims at the discovering of the disease, regardless of whether or not it is infectious, but it is also true that it is difficult to maintain absolute secrecy regarding reports. Another question which will undoubtedly be presented to the courts is the matter of exclud ing employees from work because of a noncon tagious syphilitic infection

On the statute books there are many laws en acted especially in regard to health matters which have resulted in confusion and injustice, to say nothing of the inability to enforce them All laws should be an expression of educated public de mand and in attempting to enact any particular health laws it is essential to carry out an intensive application of educational methods through the press, through medical authorities, through public health agencies, and perhaps best of all, through correctly educated patients. It would seem that the model laws for the control of syphilis that were prepared by the American Social Hygiene Association some years ago should be examined in the light of recent surveys and that an attempt should be made to progress not only toward some such general law but also toward more uniform legislation in the various states But in addition there should be an educational accompaniment to all such legislation — education in various phases of the disease to the lay public, to the physicians and to each individual patient. This legal phase demands the interest of the whole medical pro fession Not only is the interest required, but it is the duty of physicians to co-operate and to influence the enactment of rational statutes which will con sider the whole problem in the light of modern knowledge of the disease In the attempt to con trol syphilis by law there are three essential fea tures first, the insistence on an adequate examina tion, as well as on a laboratory procedure, second, the preservation of the opportunity for individual medical interpretation by properly qualified physi cians in the complex problems which arise, and, third, an adequate educational campaign over a period of years

MASSACHUSETTS MEDICAL SOCIETY

SECTION OF OBSTETRICS AND GYNECOLOGY*

RAYMOND S TITUS, M.D., *Secretary*
330 Dartmouth Street
Boston

COMPLETE INVERSION OF THE UTERUS

Mrs A M., a twenty year-old primipara, was delivered normally at term on April 9, 1939

Her family history was unimportant The pa tient had never been seriously ill Catamenia began at twelve, were regular with a twenty-eight day cycle and lasted four days without pain Her last period was July 8 1938, making her expected date of confinement April 15

Her pregnancy had been normal throughout Labor started at 3 a. m on April 9, and she was delivered with low forceps at 12:52 p m after a second stage of an hour The placenta separated spontaneously and came away with gentle manipu lation at 1 p m The patient bled profusely after the delivery of the placenta and membranes, and an ampule of Ergotrate was given as the bleeding continued, the vagina was firmly packed A lateral episiotomy was repaired. One thousand cubic centimeters of 10 per cent glucose in saline

* A series of selected case histories by members of the section will be published weekly Comment is and question by subscribers are solicited and will be discussed by members of the section.

was given intravenously, and the fundus was held constantly without pressure Two hours after delivery the blood pressure had dropped from 132 systolic to 92 systolic, 60 diastolic, and the pulse ranged from 120 to 130 Another 1000 cc of 10 per cent glucose, this time in distilled water, was given, and preparations were made for transfusion

The patient was seen in consultation at 5 p m, at which time she was being given a direct transfusion of 500 cc of her husband's blood, to which she reacted well On palpating the fundus, the customary rounded dome seemed to be slightly depressed at its central point, although as a suprapubic mass could be felt nearly up to the umbilicus, it was not thought that the uterus was inverted When the transfusion was completed, the patient was examined vaginally under nitrous oxide and ether anesthesia

On examination the fundus was felt to be completely inverted into the vagina, with the cervix moderately contracted around it With one hand on the suprapubic region and the other hand doubled into a fist in the vagina, steady upward pressure was exerted by the vaginal hand The inverted fundus could be felt to rise slowly through the cervical ring During this procedure the anesthetist reported that the patient had stopped breathing and was pulseless, but as the fundus was all but replaced, pressure was continued and the uterus returned entirely to its normal position When replacement was complete, the condition of the patient immediately improved A firm vaginal packing was inserted and the patient left the operating room in fair condition At 9 45 p m she was given a second direct transfusion of compatible blood

The packing was removed the next day without further bleeding The fundus remained in its proper position and involuted normally No elevation of temperature occurred, and convalescence was uneventful The patient and her baby went home in good condition on the thirteenth postpartum day

Comment This case represents the postpartum hemorrhage that is so characteristically associated with inversion of the uterus Apparently the inversion existed for about five hours before recognition, yet at that time the replacement of the inverted uterus was accomplished without any difficulty Vaginal packing, although done in this case without appreciating its logic because the diagnosis of inverted uterus had not been made, can and does control hemorrhage from this condition because the gauze is intimately pressed against the inverted, exposed sinuses Again the value of transfusion is emphasized, and once more the absence of infection even when the uterine sinuses have been traumatized is worthy of note Cases of this type illustrate the importance of an early diagnosis, if such can be made and reposition of the fundus accomplished, serious sequelae seem to be unusual

DEATHS

CARLISLE — FRANK H CARLISLE, M D, of Wellesley, died July 20 He was in his sixty first year

Dr Carlisle received his degree from the Harvard Medical School in 1904 Soon after his graduation he became associated with the Foxboro and Norfolk state hospitals as assistant superintendent and later became medical director of the Bridgewater State Hospital

He was a fellow of the Massachusetts Medical Society and the American Medical Association and was a member of the American Psychiatric Association and the New England Society of Psychiatry

His widow, two sons, his mother, a sister and a brother survive him

MURRAY — P JOSEPH MURRAY, M D, of Dorchester, died July 19 He was in his sixty fourth year

Dr Murray received his degree from Boston University School of Medicine in 1908 He was a former member of the Massachusetts Medical Society

MISCELLANY

NOTES

Dr Lawrence J Henderson, Lawrence Professor of Chemistry at Harvard University and professor of biological chemistry at Harvard Medical School, will deliver the next Pilgrim Trust Lecture in London, under the sponsorship of the Royal Society

The following appointments to positions at the Harvard Medical School have been recently announced Waldo E Cohn, of Berkeley, California, research fellow in medicine, Ph D University of California '38, Roger S Downs, of Saratoga Springs, New York, research fellow in medicine, M.D Harvard '36, Alexander W Souter, of Boston, research fellow in medicine, M B, Ch B (hon), University of Aberdeen '37, Justin M Hope, of Iowa City, Iowa, research fellow in neuropathology, M D Pennsylvania '34 Victor Rudomanski, of Hearny, New Jersey, research fellow in pediatrics, M D Long Island College of Medicine 34, John B Burrett, of Ann Arbor, Michigan, research fellow in physiology, M D New York Medical College '37, Horace O Parrack, of New York City, research fellow in physiology, A.M Columbia '32, William W Beckman, of Boston, assistant in medicine, M.D Harvard '35, Margaret E. M Glendy, of Boston, assistant in pediatrics, M D University of Virginia '31, Nathan B. Friedman, of Chicago, Lucius N Littauer Fellow in Pathology, M.D Cornell '34, Joseph Fischmann, of New York City, research fellow in surgery, M D University of Berlin '26

REPORTS OF MEETINGS

NEW ENGLAND OTOLARYNGOLOGICAL SOCIETY

The following are abstracts of papers presented at the April 12 meeting, in Boston, of the New England Otolaryngological Society

ERAL SINUS PHLEBITIS EFFECT OF SULFANILAMIDE. Dr F M Wattles Boston.

, twelve year-old girl was admitted to the hospital with iagnosis of an acute right otitis media with mastoiditis. : pathogenic organism was a hemolytic streptococcus. imple mastoidectomy was performed on the eleventh after the onset of the otitis. A large mastoid was nd with generalized destruction and pus throughout the cells. Small areas of the lateral sinus and dura e exposed and found to be normal. Two days after operation the patient had a chill the temperature ris- to 105.5 F The mastoid wound continued to dis- rge hemolytic streptococci. A blood culture taken he time of the chill was negative. Sulfanilamide was en 170 gr during the first twenty four hours followed 80 gr for each subsequent day After three days of treatment the patient showed no improvement. Blood ures remained negative. Six days after the operation right internal jugular vein was ligated, the mastoid sed, the lateral-sinus plate removed and the sinus ned. Free bleeding was obtained from both ends but sinus wall showed marked phlebitis. Sulfanilamide tment was continued for eight days and the patient de an uneventful recovery This case was cited to illus- e the fact that sulfanilamide did not inhibit the infec i of the lateral sinus once it had begun. The desired ilt was obtained here by surgery Surgical principles ly as much today as they did before the advent of anilamide.

Discussion Dr Oliver Lothrop cited a similar case in ch extensive mastoid destruction occurred despite ade te doses of sulfanilamide. Dr Philip E. Meltzer ssed the necessity of removing all foci before institut sulfanilamide treatment.

ROXIN TREATMENT IN OTOSCLEROSIS. Dr J E. Quincy Boston.

eferring to the work of the late Dr A. A Gray of ldon, England the author reported a series of 6 cases otosclerosis treated by the injection of thyroxin into middle ear The following results and conclusions 'e given

1. Objective improvement was noted in only 1 case.
2. Subjective improvement in well-being as well as in hearing, was reported in all but 1 case.
3. Normal secretion of wax returned in 3 cases.
4. Tinnitus was relieved in 3 cases.
5. The maximum beneficial effect came on within four to eight days.
6. In all probability the course of treatment has to be repeated at intervals of six months to one year
7. More improvement may be expected in the age group between twenty and thirty since the process has not been going on so long as it has in older individuals.

From this report, the speaker believes that the pro- ure is worth while insofar as the improved feeling the patient is concerned. It has been suggested that a ntrol series be run wherein sterile water is used in ce of thyroxin.

Discussion Dr G H Poirier said that most patients th otosclerosis feel better after almost any treatment. Quincy admitted that the "psychology of medicine" strong, but said that he did not believe that the mere local application of thyroxin is sufficient to stop the prog ress of the disease.

THREE CASES OF LABYRINTHITIS. Dr Philip Mysel Boston.

These 3 cases had several features in common (1) all had chronic otitis media of long standing (2) all had large cholesteatomas (3) all had marked bony destruc tion amounting to "nature s radical" (4) 2 had fistulas in the horizontal canal and 1 fistulas in the horizontal and the posterior canals.

The first case, that of a woman of forty-seven years, was admitted with symptoms of meningitis. The dis- eased ear showed no vestibular or cochlear function. Labyrinthectomy was done and within three or four days all meningeal symptoms disappeared. In the author s opinion this patient probably had had circumscribed labyrinthitis for a long time, the last attack having resulted in acute destruction of the labyrinth.

The second patient, a nine year-old boy was admitted with an acute exacerbation of an old chronic otitis He had had vertigo for two days, with no chills but a high temperature and marked postaural pain, tenderness and swelling. The neurological examination and the blood cultures were negative. The mastoid process was found to consist merely of a thin shell filled with cholesteato- matous tissue. A large amount of this material was also removed from the middle ear The horizontal canal showed a good-sized fistula. The operation was then stopped because the patient did not handle his anesthesia well. That same afternoon he developed a strong labyrinthine nystagmus to the good ear without nausea, vomiting headache or neurological symptoms. The cerebrospinal fluid showed no cell increase. The nystagmus persisted for over two weeks. About two and a half weeks later the middle ear was cleaned out, and the postaural wound closed The labyrinthitis in this case was in the author s opinion induced by the removal of the infected cholesteatomatous material about the fistula. The acoustic function had never disappeared completely

The third case, that of a boy twelve years of age with a history of chronic otitis media since infancy was admitted with vertigo and headache of a few days duration. A large cholesteatomatous cavity was shown by x ray There was a first-degree nystagmus to the good ear otherwise the neurological examination was negative. Perception for whisper was lost completely but conversation was heard at 4 feet. The following day the nystagmus be came more marked and the patient developed a stiff neck. The temperature rose to 102 F Lumbar puncture showed 1124 cells per cubic millimeter 83 per cent of which were polymorphonuclears. In performing a radical mas- toidectomy Dr Poirier found two fistulas, one in the hori zontal the other in the posterior canal. The temperature came down within forty-eight hours, and the patient made an uneventful recovery The author believes that the patient had an acute diffuse labyrinthitis secondary to an old circumscribed one. The meningeal signs and the lack of any other condition that could have explained the cells in the spinal fluid might have induced some surgeons to have done a labyrinthectomy However the patient promptly recovered after the middle ear had been cleaned out.

Discussion Dr Meltzer asked if it would not have been safer to have opened the labyrinth in the third case be cause of the meningeal symptoms. Dr Mysel answered in the affirmative. He said that no physiological test of labyrinthine function should take precedence over the clinical evidence of meningitis, and pointed out that the

recognition of this fact plus a timely labyrinthectomy has lowered the mortality from 75 to 18 per cent. On the other hand labyrinthitis in itself does not call for operation unless there is a threatened intracranial complication Dr Poirier did not agree with the speaker He believed that the boy would have gotten well without labyrinthectomy and that such an operation might have resulted in a meningitis

SUPPURATION OF PETROUS APEX. Dr L E White, Boston.

The patient, a woman of thirty-four, had a left simple mastoidectomy on January 15, 1939 Recovery was uneventful and on February 4 the postaural wound was healed Five days later the patient was readmitted with a chief complaint of severe trifacial neuralgia and headache of three days' duration Three days after the second admission a left postaural swelling was incised and drained X ray films showed pansinusitis and a negative petrous apex. Lumbar puncture was negative. A consultation with the nerve department reported trigeminal neuralgia, epilepsy, psychoneurosis A dental x ray film showed an abscessed left lower bicuspid The mastoid was revised The dura was widely exposed for possible epidural abscess There was soft bone above and below the horizontal semicircular canal No lead to the petrous apex was found An x ray film taken five days later showed destruction of the petrous ridge on the left side. The petrous pyramid was drained, and a Mosher basket drain inserted The latter was removed at the end of the sixth day A subsequent film showed that the basket drain had given rise to a marked tunnel effect.

While this case was being presented, Dr MacMillan showed and discussed the x ray films taken at various periods of the patient's illness

Discussion Dr Poirier said that he had had a similar case in which he used a rubber drain Drainage was difficult, however, and the patient died of meningitis

DISEASES OF SINUSES, MASTOIDS AND ESOPHAGUS FROM AN X RAY STANDPOINT Dr A S MacMillan, Boston

This was an exhaustive and splendidly prepared discussion of every phase of otolaryngology falling within the scope of the roentgen ray specialist. The discussion centered around more than three hundred lantern slides of x ray films The various positions employed in the study, especially of the petrous pyramid, were discussed in detail

NOTICES

ANNOUNCEMENT

WINTHROP F WATTS, M D, announces the opening of an office at 2 Brookhouse Drive, Marblehead

REMOVAL

BENJAMIN ALPORT, M D, announces the removal of his office from 1695 Main Street, Springfield, to 333 Bridge Street, Springfield

INSTITUTE AT UNIVERSITY OF WISCONSIN MEDICAL SCHOOL

The University of Wisconsin Medical School announces an Institute for the Consideration of the Blood and Blood-Forming Organs to be held at Madison on September 4, 5 and 6

Formal lectures will be given each morning and the early part of the afternoons of September 4 and 5 The latter parts of these afternoons will be devoted to round-table discussions, and in the evenings, addresses of more or less general interest are scheduled

Those participating in the institute include Drs. George R. Minot and Louis K Diamond, of Boston, Drs. C. P Rhoads, Paul Reznikoff, J Furth and Claude E Forkner, of New York City, Dr E B Krumbhaar, of Philadelphia, Dr Harry Eagle, of Baltimore, Dr Charles A. Doan, of Columbus, Ohio, Dr Russell L. Haden, of Cleveland, Drs Hal Downey and C J Watson, of Minneapolis, Dr Edwin E Osgood, of Portland, Oregon, Prof. C. A. Elvehjem, of Madison, Wisconsin, Dr L. J Witts, of Oxford, England, and Dr E Meulengracht, of Copenhagen, Denmark

The Wisconsin Alumni Institute has made available the funds necessary to finance the institute.

CONSULTATION CLINICS FOR CRIPPLED CHILDREN IN MASSACHUSETTS, UNDER THE PROVISIONS OF THE SOCIAL SECURITY ACT

There will be no Consultation Clinics for Crippled Children in Massachusetts during the month of August.

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY

The next written examination and review of case histories (Part I) for Group B candidates will be held in various cities of the United States and Canada on Saturday, January 6, 1940, at 2 00 p m. Candidates who successfully complete the Part I examination proceed automatically to the Part II examination held in June, 1940

Applications for admission to Group B, Part I, examinations must be on file in the secretary's office not later than October 4, 1939

The general oral and pathological examinations (Part II) for all candidates (Groups A and B) will be conducted by the entire board, meeting in Atlantic City, New Jersey, on June 8, 9, 10 and 11, 1940, immediately prior to the annual meeting of the American Medical Association in New York City

Applications for admission to Group A, Part II, examinations must be on file in the secretary's office not later than March 15, 1940

After January 1, 1942, there will be only one classification of candidates, and all will be required to take the Part I examinations (written paper and case records) and the Part II examinations (pathological and oral)

At the annual meeting of the Board, held in St. Louis on May 12, 1939, it was found necessary, on account of increased administrative expenses, to increase the application and examination fees Effective May 12, 1939, these are as follows application fee $15 00, payable on submission of application for review by board, examination fee $85 00, payable on notification to candidate of acceptance of the application and assignment to examination Neither fee is returnable. This increase does not apply to candidates whose applications were filed prior to May 12, 1939

For further information and application blanks, address Dr Paul Titus, secretary, 1015 Highland Building, Pittsburgh (6), Pennsylvania

CIETY MEETINGS AND CONFERENCES

LENDAR OF BOSTON DISTRICT FOR THE WEEK BEGINNING ONDAY JULY 31

ay r August 1
10 a. m. 12.30 p. m. Boston Dispensary tumor clinic.

AY August 4
10 a. m. 12:30 p. m. Boston Dispensary tumor clinic.

URS r August 5
10 a. m. 12 m Staff rounds of the Peter Bent Brigham Hospital. Conducted by Dr Robert T Monroe

*Open to the medical profession

ECTURE 30 SEPTEMBER 2 — Seminar in Physical Therapy Page 857 ue of May 18.

SEPTEMBER — Boston Psychoanalytic I stitute. Page 450, issue of Septem 22, 1938.

SEPTEMBER 4-6 — Institute for the Consideration of the Blood and Blood rming Organs. Page 941 Issue of June 1

SEPTEM ER 4–6 — Institute at University of Wisconsin Medical School. ge 160.

SEPTEMBER 5-8 — American Congress of Physical Therapy Page 857 Issue May 18.

SEPTEMBER 11 15 — American Congress on Obstetrics and Gynecology ge 938, Issue of December 8

SEPTEMBER 14 16 — Biological Photographic Association. Page 941 issue June 1.

SEPTEMBER 15-28 — Pan-Pacific Surgical Association. Page 863 issue of tember 24

OCTOBER 23 NOVEMBER 3 — New York Academy of Medicine. Page 977 ue of June 8.

ral, 1939 — Temperature Symposium. Page 218, issue of February 2.

DECEMBER 2 — American Board of Obstetrics and Gynecology Page 1019 ue of June 15

ANUARY 6, JUNE 8–11 1940 — American Board of Obstetrics and Gyne ogy Page 160

ARCH 7–9 1940 — The New England Hospital Association Hotel Statler ston.

AY 14 1940 — Pharmacopoeial Convention. Page 894 issue of May 25.

NE 7–8 1940 — American Board of Obstetrics and Gynecology Page 9 Issue of J ne 15

OOK REVIEWS

eart Patients Their study and cure S. Calvin Smith 166 pp. Philadelphia Lea & Febiger 1939 $2.00.

On opening this book one observes on the flyleaf that is the fifth book which Dr Smith has written on the ubject of heart disease. Two of the previous books *How Your Heart* and *That Heart of Yours* were obviously ritten for lay consumption. The present volume ac ording to the preface is for the benefit of community ractitioners." Since it is characterized throughout by a markable grammatical style, the reviewer may be for ven for quoting *in extenso* directly from the book. The assages will also give an indication of the soundness of ie factual content.

From the preface: 'Looking backwards over a quarter f a century of heart specializing several outstanding truths low on memory s horizon. They might be called the riter s Cardiac Aphorisms and their tenor dominates he pages herein. They include·

"1 The heart is more sinned against than sinning
"2. Heart protests are not always heart disease.
3. The muscle is of more importance than the mur nur the rhythm is of more importance than the rate.
"4 Heart, mind and spirit are Inseparable companions n treatment.
"5 Effort, sustained and unremitting effort of a phys cal mental or emotional type, is the principal offender in kepleting disordering and disorganizing the heart and irculation."

Page 16 Fatigue that regularly recurs at the close of each day is profoundly indicative of heart muscle weak ness and cannot be dismissed with a gesture of inconse quence. The heart significance of fatigue is revealed by a first sound that is diminished in intensity and duration. These deficiencies are further reduced following an ex ercise test.

"Heart muscle fatigue may further be recognized by the fact that the tiredness or weariness is diffused gener ally all over the body as twilight softly disseminates over a landscape."

Page 22 "Limitation on effort may take more pro found ways of directing attention to the heart. For ex ample, a spasm in a blood-vessel of a leg suddenly may inhibit walking, or both legs simultaneously may develop a weakness a weariness and an insensibility to a degree where they cannot be used and the patient must rest or else fall These two symptoms of spastic leg muscle con traction and leg insensibility are frequently among the first signs of myocardial damage."

Page 28 "People who are accustomed to living in moun tain air or at high altitudes may fail to thrive and even develop circulatory faults at lower levels and in congested centers where the atmosphere is vitiated to some degree."

Page 57 "Cardiography is the court of last resort in a differential diagnosis of heart conditions."

Page 57 "Cardiography differentiates between 'func tional and organic heart trouble."

Page 141 "On cardiochnical examination the suspi cion of syphilis will be aroused by arteries that are older than the years of the patient also by a slow deliberate rate of 60 or less with a sustained plateau at the wrist. A broad heaving and displaced apical impulse may indi cate syphilis, as also would an increase in the percussion diameter of the aortic arch.

"When there is a split first sound to the heart, the phy sician should bear in mind the possibility that syphilitic invasion of the heart s conduction system may be causing one ventricle to contract a fraction of a second later than its fellow of the opposite side. The suspicion of syphilis will also be aroused when the examiner hears a tinkling musical or metallic sound over the base of the heart."

Page 141 "Heart patients have concealed and denied any earlier syphilitic invasion only to confess reluctantly remote syphilis, when told that the heart behavior or the cardiogram, points to the disease.

"Cardiography writes syphilis in bold vigorous strokes."

With the final paragraph of the preface the reviewer finds himself in full agreement "Should this volume prove of value in any heart emergency or in any personal heart concern, to community practitioners, among whom I was one in the first ten years of practice and always in need of such a book, then shall its writing have been worth while."

Anemia in Practice Pernicious anemia William P Mur phy 344 pp. Philadelphia and London W B Saunders Co., 1939 $5.00.

Dr Murphy has written a short monograph which de votes the first 67 pages to the normocytic and hypochromic anemias and the remainder of the book to pernicious anemia. The numerous charts are well reproduced and the colored plates are adequate. Certain of the illustra tions such as photographs of a microscope, blood-count ing pipettes and icteric index standards, might be elim inated. On the whole, however there is made available a considerable amount of useful information. The bibliog raphy while sufficient for the average practitioner is by no means complete There is a good index.

Pulmonary Tuberculosis A synopsis Jacob Segal 150 pp New York, London, Toronto Oxford University Press, 1939 $2 75

This book is a short outline of the present-day concepts of the diagnosis and treatment of pulmonary tuberculosis One chapter deals with the prevention of this disease

It is not a textbook for the beginner, neither is it a reference work for the practitioner Out of one hundred and forty eight pages, thirty-one are devoted to illustrations Detail has been definitely sacrificed for the sake of brevity

On the whole, the author has been very successful in giving the pertinent points in a very readable and delightful style, which at times leaves the reader somewhat in the dark. Only one paragraph is devoted to empyema complicating artificial pneumothorax therapy A statement like, Hard work or work which involves the inhalation of stone or metal dust or injurious gases" is a contributory cause in the development of tuberculosis, certainly needs further elucidation

While former works have been too voluminous and bulky, this one leans a bit too far in the opposite direction However the practitioner looking for a *short* outline on the present-day developments in the diagnosis and treatment of pulmonary tuberculosis will find it quite authoritative and up to date

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Biology for Pharmaceutical Students and Others S Mangham and A R. Hockley 613 pp Baltimore William Wood & Co , 1938 $6 50

This book is a welcome and worthy addition to those already available on the subject. The arrangement and presentation of the material is excellent. The many illustrations are clear and will probably stimulate students to go beyond this stage of diagrams and by means of personal observation and dissection prove to themselves the author s incontrovertible statement "Biology is not an armchair subject."

Nearly two thirds of the book are devoted to the consideration of the fundamental principles — morphological, chemical and physical — of plants The textual approach to the various plants is very satisfactorily carried out.

The section on zoology is introduced by a discussion of the fundamental properties of life and the organization of the vertebrate body Using the frog and the rabbit as types the student is introduced to the gross anatomy of the various systems of the body The chapter on animal histology is adequate for the purpose, yet it might be made more useful by adding additional pages on organology The study of the invertebrates centers about the ameba and paramecium, the hydra, the earthworm and the cockroach The final three chapters deal with the importance of parasitism, the development of the frog and chick and outlines of evolution, variation and heredity

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A Textbook of Neuro Radiology Cecil P G Wakeley and Alexander Orley 336 pp Baltimore William Wood & Co , 1938 $8 00

With the recent advances in neurology, a new point of view has been reached in regard to the value of radiology to this specialty The addition of Lipiodol to our diagnostic agents has led to a new study of the nervous system by the x-ray Similar advances have been made through the use of air injections for encephalography and ventriculography The effects of brain tumors, moreover, on bony structures are now better understood and more easily visualized by the x ray A book covering this field is needed and the text on review attempts to this want

The publication, however, is far from satisfactory T authors, using the material largely collected at the W End Hospital for Nervous Diseases in London, have, general, covered most of the field, but much of their w has been taken from the work of others One feels lack of a personal report on the various conditions scribed There must be many series of x ray exami tions at other hospitals where the material is much m abundant and, therefore, of greater use in writing a t book on the subject. There is a paucity of illustratic and certain well-established conditions, such as rupt of the intervertebral disks, the diagnosis of which is usu confirmed by x ray, are only slightly touched upon

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Sir Thomas Roddick His work in medicine and pul life H E MacDermot. 160 pp Toronto T Macmillan Co of Canada, Ltd , 1938 $2 00

Sir Thomas Roddick (1846–1923), one of the outsta ing physicians of Canada, was largely responsible for in ducing Lister's antiseptic methods into the Montreal G eral Hospital As early as 1869, A E Malloch, who l served as a house surgeon at the Glasgow Royal Infirm under Lister, reported some cases, as did Robert Cra of Montreal This work was disregarded, and it was until 1877 that Roddick began to use the antiseptic meth in Montreal In two years, whatever skepticism there h been was almost entirely removed

Roddick was also responsible for uniform medi registration in Canada, his bill, coming into force in 19 provided for the Medical Council in Canada The cour grants a diploma giving the right to practice in Cana

Dr MacDermot, a medical historian of note, has w ten a delightful short life of Roddick The book sho be widely read by all American physicians as a medi biography of the first importance.

William B Wherry, Bacteriologist Martin Fischer pp Springfield, Illinois and Baltimore Charles Thomas, 1938 $4 00

Professor Martin Fischer's complete record of the life William B Wherry should be welcome to all men science. The exact rendering of this life story is absorbing and stirring When one has finished readi this book, one has the distinct feeling that here is the sort of man who should have his portraits reproduc and his achievements recounted The book is well print beautifully bound and contains seventeen portraits addition there is a list of eighty two publications at t end of the book, which constitutes the bibliography It a memorable book

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What It Means to Be a Doctor Dwight Anderson pp New York Public Relations Bureau, Medical S ciety of the State of New York, 1939 $1 00

Here are eighty five "inspired" pages Hippocrates a Osler are harked back to, fee-splitting is glossed over, t generosity of the profession is emphasized and the conve tional questionnaire is used, all in the best tradition of t professional secretary The name of the Association American Medical Colleges is misstated, and there s other suggestions that it is the work of a tract writer T only reference provided is to another publication of t same origin The reviewer was unable to resist specu tion concerning, and was somewhat annoyed by, referenc to a recent president of the American Medical Assoc tion As propaganda for organized medicine it is legi mate, but organized medicine could get along without

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ENCEPHALITIS IN MAN CAUSED BY THE VIRUS OF EQUINE ENCEPHALOMYELITIS

Report of a Case in an Adult

JAMES C. McADAMS, M.D.,* AND JOSEPH E. PORTER, M.D.†

FALL RIVER, MASSACHUSETTS

EQUINE encephalomyelitis or Borna disease of horses and cattle has been known throughout Europe since 1813. In the western part of the United States a somewhat similar malady has been observed for over sixty years. During 1930 and 1931 a serious epidemic involving the central nervous system of horses and mules occurred in the San Joaquin Valley in California and was shown by Meyer, Hartog and Howitt[1] to be caused by a filterable virus. In a subsequent paper the same authors[2] reported that the virus differed from that recovered from the European type.

In 1935 a new focus of the disease appeared in New Jersey and Virginia. The virus recovered from this Eastern epidemic was shown by Ten Broeck and Merrill[3] to be immunologically distinct from the Western strain of Meyer and his co-workers. Guinea pigs immunized against the Western virus succumbed to injections of the Eastern virus.

Kelser[4, 5] has shown that the disease can be transmitted from one guinea pig to another by certain species of mosquitoes. Isolated cases of human beings dying of encephalitis in areas where the disease is prevalent have been mentioned by Meyer[6] and Da Fano and Ingleby.[7] That the virus of equine encephalomyelitis was the etiologic agent in these cases was not proved by immunological experiments.

During the summer of 1938 an epidemic of equine encephalomyelitis occurred throughout various sections of New England, principally in Rhode Island and Massachusetts. Fothergill, Dingle, Farber and Connerley[8] reported a case in a seven year-old boy who died of a disease affecting the central nervous system. The virus which was recovered from the brain of the child was shown by immunological experiments to be identical with that found in the Eastern type of equine encephalomyelitis. This, therefore, is the first case of this disease in a human being to be thus proved.

Later in 1938 Wesselhoeft, Smith and Branch[9] succeeded in isolating the virus of the Eastern strain of equine encephalomyelitis from the brains of 4 children. Meyer[6] and Wesselhoeft, Smith and Branch[9] have reported adult cases without immunological confirmation. Eklund and Blumstein[10] reported 6 cases of encephalitis in farmers in the Middle West where equine encephalomyelitis was prevalent. Blood serum from 1 of these men was capable of neutralizing the virus of the Western strain of equine encephalomyelitis.

In none of these adult cases was the virus of the disease recovered and proved by immunological experiments. For this reason, and because of the rarity of the disease in man, we feel justified in reporting the following case.

CASE REPORT

F. K. (Case 42909), a 55-year-old farmer, was admitted to the Truesdale Hospital on September 14, 1938. He was seen at his home by one of us (J. C. McA.) in consultation with Dr. Clarence E. Burt, of New Bedford. The patient had been perfectly well until noontime of the day previous to his admission to the hospital when he complained of rather severe pain in the midfrontal region. Throughout the afternoon his discomfort had become more acute and the pain had extended more diffusely over the frontal area. On examination by Dr. Burt that evening he appeared seriously ill and had a moderately elevated temperature. During the night his temperature rose slightly and he became progressively more resistant and uncooperative, refusing to remain in bed. During the latter part of the night he had a generalized convulsion which lasted only a few minutes. A similar convulsion occurred the following morning. From this time on he became rapidly less responsive and less reasonable. By noontime on September 14 he was comatose and showed no signs

*Physician, Truesdale Hospital, Fall River, Massachusetts.
†Pathologist, Truesdale Hospital.

of response except when disturbed by physical examination No nausea or vomiting occurred at any time. He was admitted to the hospital in the afternoon

Close questioning of relatives revealed nothing of importance in his past or familial history

Although encephalomyelitis among horses had been frequent in this section of Massachusetts during the late summer of 1938, the only case known to have existed near the patient s residence occurred on a farm a half mile distant, shortly before the onset of his illness

Physical examination on admission revealed a comatose man His face was somewhat flushed and the skin was warm but not unusually moist. The rectal temperature was 103 8°F The patient showed very little response to stimulation, and whenever an attempt was made to arouse him he became excessively irritable and resistant. At times he muttered incoherently and made repeated attempts to get out of bed Respirations were rather deep but regular, the rate being 26

Examination of the head and scalp was negative. The pupils were normal in size, equal and regular, and reacted somewhat sluggishly to light. There was no discernible muscle imbalance. Examination of the fundi was difficult, the only abnormality noted being a moderate engorgement of the veins The ears, nose and throat revealed no abnormalities There was no palpable cervical lymphadenopathy The thyroid gland was not enlarged. There was a moderate degree of rigidity of the neck, but the Kernig and Brudzinski signs were not elicited The lungs and chest were normal The heart showed a regular rhythm and a rate of 88 No enlargement was noted on percussion, the sounds were of good quality and no murmurs were heard The blood pressure was 105/60 Except for a moderate degree of gaseous distention, examination of the abdomen was negative.

The motor power of the extremities appeared to be normal, as evidenced by movements in response to stimulation There were no deformities or developmental defects There was no evidence of atrophy of any muscle group No fibrillary tremors were noted The deep reflexes were obtained only with considerable difficulty, the impression being that they were greatly diminished No Hoffmann sign was elicited in either hand The plantar reflexes seemed to vary On one occasion a very suggestive Babinski was noted in the right foot. Subsequently a positive bilateral Babinski was recorded, but a few hours later no response to plantar stroking could be elicited with either foot.

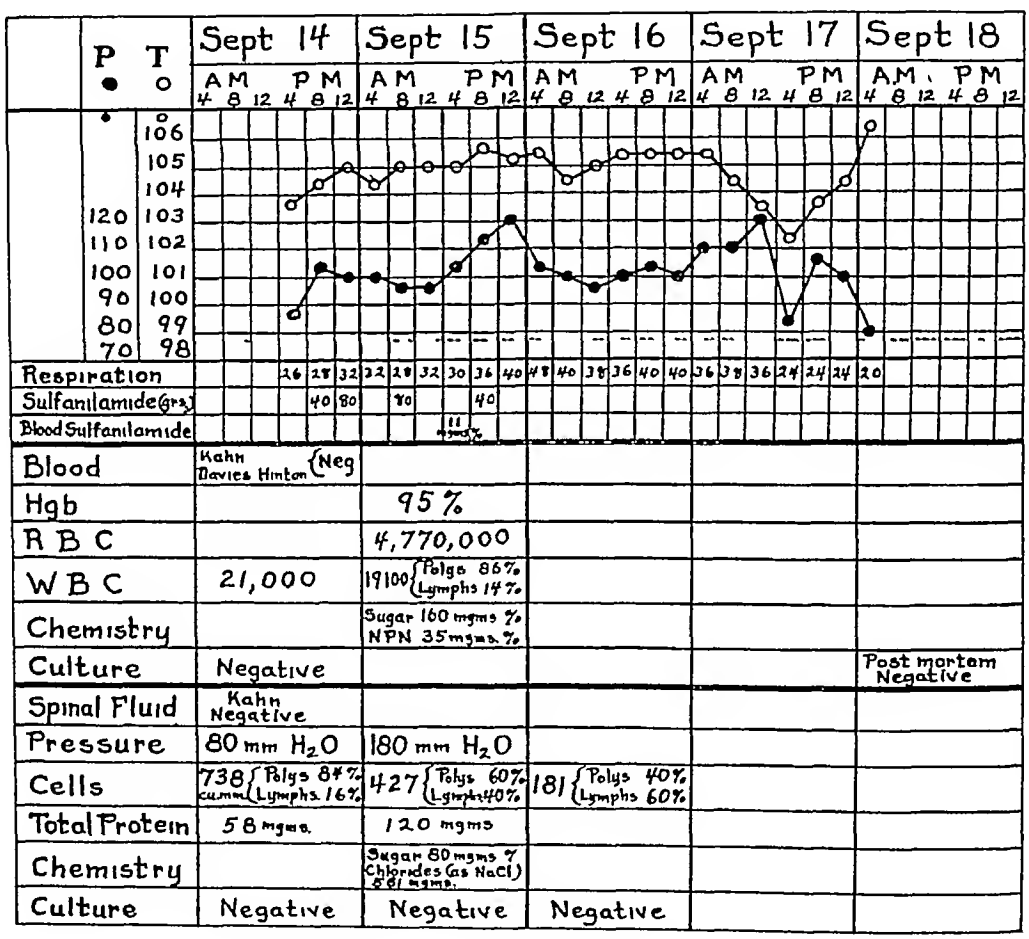

CHART 1

The clinical impression at this time was that the patient was suffering from an acute encephalitis

The results of laboratory examinations are recorded in Chart 1 After preliminary laboratory examinations we felt more certain that we were dealing with some form of encephalitis, rather than with an infection involving the central nervous system caused by any of the ordinary pathogenic bacteria

The treatment instituted was empirical and symptomatic. Although we saw no specific indications for its use, we believed that we had nothing which offered more hope than the administration of sulfanilamide. An initial

dose of 500 cc. of 0.8 per cent solution of this drug in normal saline solution was given subcutaneously. Since there was no untoward reaction a liter of the solution in the same concentration was administered similarly after a 3-hour interval. This was repeated the following morning so that during the first 24 hours of his hospitalization he received a total dose of 200 gr. of sulfanilamide. At this time the blood concentration of sulfanilamide was 11 mg. per 100 cc. The dosage of sulfanilamide was later reduced so as to maintain as nearly as possible a therapeutically effective level in the blood stream.

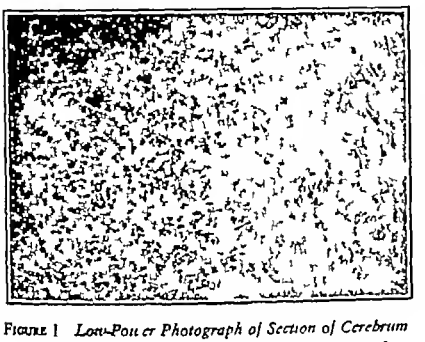

FIGURE 1. *Low-Power Photograph of Section of Cerebrum. Note the increased cellularity consisting predominantly of polymorphonuclear leukocytes.*

During the first 24 hours in the hospital the patient had eight generalized convulsions, occurring at approximately 2½ hour intervals and lasting 3 or 4 minutes. It was found necessary to give sodium luminal intramuscularly at various intervals in order to allay restlessness. Otherwise the general condition remained unchanged. There was a moderate degree of cyanosis which was attributed to the effect of the sulfanilamide but no other toxic evidence of the drug was observed. The respirations, however began to show some irregularity resembling the Cheyne–Stokes type. It is possibly worthy of note that after the first 24 hours no further convulsions occurred and the patient's restlessness subsided.

On September 16 his condition became worse. Respirations were more labored and were definitely of the Cheyne–Stokes type. The pulse, however remained of good quality considering the degree of elevation of temperature. The patient began to perspire freely although his skin remained warm.

During the morning of September 17 for the first time the pulse began to show signs of change in quality so much so that intravenous stimulants were given on two different occasions. Signs of bronchial and pulmonary congestion also developed. All medication was discontinued at this time. The temperature dropped rather abruptly to 102.4 F. rectally during the afternoon but gradually rose during the afternoon and continued to do so throughout the night. The patient expired September 18 at 5 a. m., 5 days after the onset of the initial symptoms.

Autopsy Findings. The essential feature of the examination performed 4 hours after death was an acute diffuse encephalitis. The brain weighed 1370 gm. The pia arachnoid was clear and translucent and showed no gross evidence of exudate. The vessels, however were markedly engorged. The convolutions were flattened and the sulci narrowed especially over the parietal regions. The cut surface revealed a marked congestion of all the small vessels, most prominent in the white matter. The ventricles were not dilated and the cerebrospinal fluid appeared clear. The vessels of the pons, medulla and cerebellum on cut section showed less engorgement than did those of the cerebrum.

The right lung weighed 770 gm., the left 500 gm. There was a moderate degree of pulmonary congestion and edema. The bronchioles contained some mucopurulent exudate, but there was no gross evidence of pneumonia.

Microscopically there was a pronounced degree of neuronophagia throughout the cerebrum and a diffuse scattering of polymorphonuclear leukocytes and microglia. Many foci of polymorphonuclear leukocytes and monocytes were seen (Fig. 1). Other areas suggestive of edema or early ischemic necrosis were not infrequent. The vessels were congested many contained thrombi some of a hyaline nature, others fibrinous. Around many of the vessels there were accumulations of monocytes and polymorphonuclear leukocytes (Fig. 2). This type of reaction was also present to a slight degree in the pia arachnoid.

The spinal cord was not examined.

Except for pulmonary congestion, the other organs were essentially negative.

Portions of the brain were preserved in 50 per cent glycerin and delivered to Dr. LeRoy D. Fothergill at the

FIGURE 2. *High-Power Photograph of Vessel in Cortex. Note the perivascular infiltration and the polymorphonuclear leukocytes and larger cells which are monocytes. The lumen contains a so-called "hyaline thrombus."*

Harvard Medical School. He was able to isolate a virus from this tissue which by immunological experiments proved to be that of the Eastern type of equine encephalomyelitis.

COMMENT

The clinical course in this case had certain features which particularly impressed us. The onset of symptoms was abrupt and the disease ran a fulminating course to a fatal termination. Generalized convulsions were a prominent feature during the first thirty six hours of the disease, but

at no time were any neurological signs observed suggesting that some area in the central nervous system was predominantly involved

Certain laboratory studies, many of which parallel previously reported findings, deserve particular mention The leukocyte count was markedly elevated, with an absolute increase in polymorphonuclears The cell count of the spinal fluid was increased, and at least in the initial stage was characterized by a marked preponderance of polymorphonuclear leukocytes, which is not the usual finding in other types of encephalitis Later in the course of the disease we observed a progressive decrease in the total number of cells, coincident with a gradual shift to a predominance of lymphocytes The glucose concentration, as well as the chloride content, was normal The total protein of the cerebrospinal fluid was markedly increased Cultures of the fluid aerobically and under partial oxygen tension consistently showed no growth

The microscopic lesions which predominated in this case were vascular congestion with thrombosis, perivascular infiltration, focal collections of polymorphonuclear leukocytes, foci of early ischemic necrosis and neuronophagia This picture is fairly characteristic, resembling only that seen in early cases of poliomyelitis and, to some extent, in encephalitis of the St Louis type In each, the brains show a very acute reaction In the St Louis epidemic the infiltrating cells were usually lymphocytes or monocytes with an occasional polymorphonuclear leukocyte In the present case, on the contrary, the infiltration was predominantly by polymorphonuclear neutrophils

This general picture of polymorphonuclear predominance was even more striking in the sections taken from brains of children and horses dying of equine encephalomyelitis, which we were permitted to study through the courtesy of Dr Sidney Farber of the Children's Hospital, Boston As we have stated, our own case exhibited these characteristics to a lesser degree, which we suggest may be accounted for by the age of the individual and the longer course of the disease as compared with that in most of the other cases studied

In our therapeutic efforts we call attention to only one observation Sulfanilamide was administered in a dosage sufficient to obtain a blood concentration considered to be in an effective range for those infections in which the drug seems most beneficial We failed to observe any benefit derived from its use in this case

SUMMARY

A case of encephalitis in an adult from which the etiologic agent was isolated and proved to be identical with that of the virus of the Eastern type of equine encephalomyelitis is presented

We believe that this is the first reported case in a human adult proved in this manner

We are indebted to Dr LeRoy D Fothergill, Department of Bacteriology and Immunology, Harvard Medical School, for his work in proving the identity of the virus in this case. Without his aid, a complete report would have been impossible.

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GONOCOCCAL ENDOCARDITIS, WITH RECOVERY AFTER SULFAPYRIDINE*

Report of a Case

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Bacterial endocarditis due to the gonococcus is a serious and usually fatal disease. The important aspects of this subject have been reviewed in the recent literature.[1–3] Recovery has followed varying types of therapy, including fever therapy[2] and sulfanilamide.[4] The effectiveness of sulfapyridine§ in gonococcal[4–11] and streptococcal[1] infections seemed to warrant a therapeutic trial of this new sulfanilamide derivative in a recently observed case of bacterial endocarditis, in which a gonococcus and a non-hemolytic anaerobic streptococcus had been grown from the blood. Previous treatment with sulfanilamide had been ineffective.

CASE REPORT

Mrs. S. C., a 24-year-old white housewife, was admitted to Duke Hospital on September 25, 1938, complaining of fever with chills for about 4 months. Her family and marital histories were noncontributory. Her past health had always been good. Detailed inquiry revealed only the usual childhood diseases, malaria at 15, infrequent head colds, sore throats with referred pain to the right ear and mild constipation. On the night of July 5, 1938, during the 8th month of her initial and normal pregnancy, the present illness began abruptly when the patient was awakened by a chill and high fever. The next day she developed painful, swollen knee joints, which were followed by similar involvement of the toes of both feet and the 4th and 5th fingers of the right hand. Within 2 days all the affected joints had subsided except the left knee. Daily chills with high fever continued, and on July 14 the patient was admitted to a nearby hospital, where aspiration of the left knee revealed purulent fluid; no organisms were recovered. Blood cultures were negative and the gonococcal complement-fixation test was 4+. On July 26 the patient delivered spontaneously a normal child. There followed a temporary remission of chills and fever and she was discharged feeling quite well except for swelling, stiffness and pain in the left knee. On August 9 chills and fever reappeared, requiring readmission to the hospital, where she remained for the next month and was given an adequate course of sulfanilamide and three blood transfusions without significant therapeutic effect. She continued to have irregularly recurring chills, high fever and marked sweating and lost slowly in weight until her admission to Duke Hospital on September 25. In the interim between chills she felt surprisingly well. The left knee joint had gradually become partially ankylosed.

Physical examination revealed a pallid, slender, poorly developed, undernourished woman who appeared acutely ill. The temperature was 103.6 F., the pulse was 116 and the respirations were 24. The skin was pale, warm and quite moist. The spine was straight and there was no generalized lymphadenopathy. The mucous membranes were pale. No petechiae were found after careful search. The eyes, ears, nose and throat were normal. The teeth were in good repair. The tonsils were small and embedded, but creamy material could be expressed from the crypts. There was hyperemia of the tonsillar pillars and posterior pharyngeal wall. Small cervical nodes were palpated bilaterally. The thyroid was not enlarged, and the cervical veins were not distended. The chest was slender but symmetrical; the lungs were clear except for a few fine crepitant rales heard after cough over a small area at the angle of the right scapula. The apex of the heart was in the 5th space 9 cm. from the midsternal line. The left border of dullness was 9.5 cm., and the right border 4.5 cm., from the midsternal line. At the apex the sounds were of normal intensity, but a faint protodiastolic gallop rhythm was present. Over the pulmonary area a soft systolic murmur and a high-pitched early diastolic murmur transmitted beneath the sternum to the 3rd interspace were heard. P_2 was greater than A_2, with no accentuation. The rhythm was regular; the pulses were synchronous; the artery walls were soft. The blood pressure was 100/70. The abdomen was normal; the spleen was not felt. Pelvic examination revealed only slight erosion of the cervix and a normal uterus. Rectal examination was not remarkable. The left knee showed limitation of motion to full flexion, but no other abnormalities. Neurological examination revealed no abnormality.

The hemoglobin was 9.3 gm. (60 per cent), the red-blood-cell count 3,050,000 and the white-cell count 10,500, with 78 per cent polymorphonuclear neutrophils, 1 per cent eosinophils, 7 per cent monocytes, and 14 per cent small lymphocytes. Repeated urinalyses showed only a few white-blood cells, and stools were normal. The sedimentation rate was 37 mm. per hour, corrected. A blood Wassermann test was negative. A gonococcal complement-fixation test was 4+ in all dilutions on two occasions. An electrocardiogram was entirely normal. A teleroentgenogram showed a triangular area of consolidation in the midportion of the right lung, interpreted as an infarct. The heart was enlarged to the left and somewhat globular. The cardiac measurements were: maximum right 4 cm., maximum left 10.5 cm., total 14.5 cm.; the internal diameter of the chest was 24 cm. A roentgenokymogram showed normal pulsations. An x-ray film of the left knee revealed osteoporosis with rarefaction along the joint margins, interpreted as infectious arthritis. A cervical smear and culture and bladder cultures were negative for *Neisseria gonorrhoeae*.

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§Sulfapyridine is the name adopted by the Council on Pharmacy and Chemistry (J. A. M. A. 112:49, 1939) of the American Medical Association for the pyridine derivative of sulfanilamide which has been called by various names, such as 2 (p-aminobenzenesulfonamide) pyridine, 2 (p-aminobenzenesulfonamido) pyridine, Dagenan and M. and B. 693. The material for investigative purposes was kindly supplied to us under the name of 2-sulfanilamido-pyridine by the Calco Chemical Company, Incorporated, Bound Brook, New Jersey.

The patient was placed at strict bed rest and given a high caloric and high vitamin diet, iron, liver and blood transfusions. During the first 5 hospital days she had daily chills, with sharp rises in temperature to 103.1°F., usually in the evening, accompanied by malaise and excessive perspiration. Five consecutive blood cultures, taken daily at the peaks of fever, were positive for both *N. gonorrhoeae* and non-hemolytic anaerobic streptococci. On the 6th day, sulfapyridine was begun in oral doses of 0.3 gm. every 6 hours for 2 days, then increased to 0.6 gm. for the next 12 days. The fever subsided on the 1st day of drug therapy, the white-cell count fell to 8700, with 64 per cent polymorphonuclears, and three consecutive blood cultures during the ensuing afebrile period were negative. Blood sulfapyridine levels ranged from 2.3 to 3.8 mg. per 100 cc. The patient was transfused three times during the afebrile period, and her hemoglobin increased to 11.3 gm. and the red-cell count to 3,520,000. On the 16th, 17th and 18th days the temperature rose to 103.1°F., with malaise and sweating but no chills. The white-cell count rose to 12,300, and a blood culture was positive for the anaerobic streptococcus but negative for *N. gonorrhoeae*. Sulfapyridine was increased to 0.9 gm. every 6 hours, and the temperature remained normal for 5 days. On the 24th day the temperature again rose, to 100.4°F., but without associated symptoms. The drug dose was increased to 5 gm. daily and continued at this level for the next 31 days. Blood sulfapyridine determinations varied from 4.0 to 7.3 mg. per 100 cc. on this dosage level. The patient remained afebrile and asymptomatic throughout the remainder of her hospital stay, felt perfectly well and gained in weight and strength, and was allowed to be up and around for 1 week before her discharge on the 63rd hospital day, November 27. After the fever abated, the heart resumed its normal size, the gallop rhythm disappeared, and the pulmonary diastolic murmur became faint. Repeated electrocardiograms while under drug therapy showed only flattening of the T waves in all leads. Several teleoroentgenograms of the chest showed gradual but complete clearing of the infarct and return of the heart shadow to normal. No ill effects from sulfapyridine were noted except minimal cyanosis and transitory nausea on doses of 5 gm. daily.

The blood culture became negative on the 23rd hospital day, and remained negative (four blood cultures taken at approximately weekly intervals). Following three additional blood transfusions the hemoglobin rose to 14.3 gm. and the red-cell count to 4,240,000, but fell steadily to 11.6 and 3,690,000 respectively at the time of discharge. This may have been due to prolonged administration of the drug (52 days).

Of considerable interest are the serial studies of antibodies, which were done at weekly intervals during the entire hospital stay. Opsonins and agglutinins for both organisms were present in low titer, and bacteriolysins were absent at entry. However, the gonococcal complement fixation test was 4+ in all dilutions. Following the disappearance of the bacteremia, bacteriolysins appeared and, together with opsonins and agglutinins, increased to a very high titer at the time of discharge, the gonococcal complement fixation test becoming negative.

The clinical diagnosis was bacterial endocarditis due to *N. gonorrhoeae* and a non-hemolytic anaerobic streptococcus, affecting the pulmonary valve, with pulmonary insufficiency and infarction of the lung.

The patient was re-examined on December 21, 3½ weeks after discharge. She had been perfectly well except for a cold with right pleural pain for several days, and had gained in weight. The lungs were clear, the heart was normal in size, the pulmonary diastolic murmur was barely audible but definitely present. A teleoroentgenogram and an electrocardiogram revealed no abnormalities. A blood culture was negative, and tests for immune bodies showed opsonins in very low titer, agglutinins and bacteriolysins unchanged from the previous high levels, and the complement fixation test still negative.

The patient was seen again on April 6, 1939, 4 months after discharge, having been well except for rather frequent colds and sore throats and a right otitis media. The cardiac findings were unchanged except for slight increase in the intensity of the pulmonary diastolic murmur. A teleoroentgenogram was normal, and an electrocardiogram revealed a slight flattening of the T waves in Lead I. Cultures of the blood were negative. Tests for immune bodies revealed opsonins unchanged, agglutinins reduced to low titer and bacteriolysins but slightly decreased from their former levels. A gonococcal complement fixation test was negative.

DISCUSSION

There is little doubt that this patient had bacterial endocarditis involving the pulmonary valve. The history of recurrent chills and pyrexia and the presence of septic fever, pulmonary insufficiency and leukocytosis were indicative of endocarditis, five consecutive positive blood cultures, together with x-ray evidence of pulmonary embolization, were considered diagnostic. Clinical recovery under therapy was evidenced by general improvement in the patient's condition, the subsidence of fever, leukocytosis and sedimentation rate, the regression of the heart lesion, the disappearance of the pulmonary infarct as disclosed by x-ray studies and the repeatedly negative blood cultures.

The occurrence of a mixed infection — gonococci and anaerobic streptococci, both of which were probably superimposed upon the pulmonary valve — is unusual. The astonishingly prompt response of the fever to sulfapyridine on the first day of drug therapy suggested an antipyretic effect. Of the two organisms the gonococcus proved the more vulnerable to chemotherapy, since it disappeared from the blood stream first. The optimal dosage of sulfapyridine and the duration of its administration for the successful treatment of bacterial endocarditis are not known. Because of recurring bouts of fever, indicating continued activity of the infection, the drug dosage, which was initially low to avoid possible toxic reactions, was gradually increased from 1.2 gm. to 5 gm. per day, given in divided doses at six-hour intervals so as to maintain a uniform blood concentration. This dosage level proved adequate for cure, the blood sulfapyridine concentration ranged between 4 and 7.3 mg. per 100 cc., and the only toxic symptoms, slight cyanosis and transient nausea, were inconsequential. The reappearance of anemia at the end of the hospital stay may have been due to prolonged administration of the drug.

Coincident with the disappearance of the bac-

teremia, immune bodies appeared and increased to high titer, and the gonococcal complement fixation test, initially 4+, became negative This inverse relation of immune bodies to complement fixing antibodies is an important one The appearance of the former in high titer and the disappearance of the latter, together with the subsidence of all clinical signs, are probably indicative of cure

SUMMARY

A case of bacterial endocarditis due to the gonococcus and a nonhemolytic anaerobic streptococcus, superimposed upon the pulmonary valve is reported Recovery followed the oral administration of sulfapyridine.

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AN ADDRESS ON THE OCCASION OF THE FIRST MEETING OF THE TUFTS COLLEGE MEDICAL SCHOOL COUNCIL*

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NEW YORK CITY

WHEN I was asked to address this group, I was reminded of a man who some years ago, in the afternoon of life, remarked to me that he felt certain that he would have been a better citizen and a more successful one had he possessed the ability to distinguish with certainty the difference between temptation and opportunity That distinction is sometimes difficult

I have chosen to regard this invitation as an opportunity because I happen to have some ideas and notions as to the rendering of good medical service in rural communities What I have chosen to regard as an opportunity might easily be regarded as a temptation if I were to attempt to depend too much for support of these ideas and notions upon such facts and statistics as are available concerning the practice of medicine in rural districts. Such facts and statistics are not necessarily entirely reliable, and they are capable of various interpretations on which one may easily be tripped up To avoid the temptation and still seize the opportunity, I shall endeavor to confine my factual and statistical background to statements that I believe cannot be questioned, and to do it as briefly as possible

It may be true that there is a shortage of physicians in rural districts in some parts of the United States. It is true for example, that in 1931, according to the American Medical Association,[1] there were in Maine, New Hampshire and Vermont, respectively, 635, 367 and 341 physicians in general practice as compared with 4169 in Massachusetts, and making due allowance for population differences, the more rural northern states mentioned had fewer physicians per unit of population In Vermont a recent study[2] gives 461 practicing physicians in the state, which perhaps approaches adequacy so far as numbers are concerned, although, as I shall try to show later, there are factors of decided importance besides numbers. It is true also, according to a study by Weiskotten[3] that of 3026 men who had graduated from medical school in 1925 and supplied information, 11 were practicing in Maine six years later 5 in New Hampshire and 7 in Vermont The same study shows that of 3418 men graduated in 1930 who had supplied information, there were 12, 16 and 10 respectively, practicing in those three states six years later We know also, for example, that in 1920 only 17 per cent of Johns Hopkins graduates were practicing in towns of less than

* Held at the Joseph H Pratt Diagnostic Hospital Boston, May 10 1939
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twenty-five thousand population.[4] Therefore there is, I believe, some evidence that our rural areas are — or have been — somewhat less well supplied with physicians than are our larger towns and cities.

Such a statement, however, needs to be made with at least two reservations. First, in all probability some urban areas are oversupplied with physicians, second — and far more important — such conclusions and the studies on which they are based deal with numbers, or quantity, and in no sense with quality. It is, I think, relatively unimportant that a given area should have so many physicians per given unit of population. It is, on the other hand, extremely important that an area should have a number of competent physicians with modern training, adequate to meet the demand for good medical service. Statistical studies do not determine such facts with real accuracy. Certain studies have been made which throw some light on this particular matter, and to a limited extent, observation on the ground may confirm the resulting judgments. In one state with which I am reasonably familiar, the state health department made a study[5] in 1927 which showed that in the general rural areas, exclusive of a number of large urban districts, the average age of the practicing physicians was fifty-three, and that 29 per cent were over sixty, and a study of two hundred and eighty-three rural counties in forty-one states, made by Pusey[6] and published in 1926, showed the average age of physicians to be fifty-two and the average period in practice twenty-six years. The latter study stated that of 4410 physicians practicing in those counties, only 9 per cent had been graduated within the preceding ten years, and that no recent graduate had entered 35 per cent of those counties within that period. According to the Vermont study mentioned above, of the 461 practicing physicians in the state no less than 221 were over fifty-five.

Enough of statistics and studies, such as I have quoted provide perhaps conclusive proof of very little that is of value, but they do, I think, give indications of conditions which may to a considerable extent be confirmed by known facts and observation.

To illustrate: medical education today and twenty-five years ago are two very different things. It is obvious that physicians who received their training twenty-five or more years ago have not received a modern medical education. A few of them — men of determination, ambition and scholarly interest — have kept up to date reasonably well despite a busy practice and many difficulties. Yet when you find a rural area today with a preponderance of physicians well over fifty, it seems a fair inference that many, if not most, have dropped far behind, and are not equipped to practice as good medicine as the people might wish and be entitled to receive, and this inference has been confirmed by personal observation and contacts, in some rural districts at least, by the medical staff of the foundation with which I am associated, and is a fact well known to the faculties of certain medical schools.

Admitting, then, that there are many variations between different districts, and that anything I have said or that can be said does not necessarily prove that any particular condition exists everywhere, it remains, I believe, a fact that something needs to be done — and for that matter something is being done in a number of places and the work in Maine of Tufts College Medical School is an encouraging experiment along this line.

In my judgment, there are several requisites to the solution of the problem of securing really good medical practice in rural areas. Those that occur to me are first, to get well-trained young medical men to undertake practice in such areas, second to provide natural and reasonable — not artificial — incentives to keep them there, and third, to include in the incentives, by all means, the facilities which are necessary to the practice of good medicine, and those which make it possible and feasible for a physician to keep abreast of the progress of his profession — a difficult thing at best, which will not be done, except by the unusual man, without such facilities.

It is because Tufts College Medical School is making this sort of thing possible, particularly in Maine, that I am interested in the school. It is pre-eminently, as its record shows, a New England institution. It trains men for practice in New England, it has, with the co-operation of the Bingham Fund Associates, established in Maine certain facilities and certain opportunities which should lead a reasonable percentage of young medical men to think that country practice in this state is worth while.

I assume that most of you are familiar with the methods followed in this undertaking. To my mind the arrangements, already in part established, whereby small local community hospitals are affiliated with certain regional hospitals, with the Joseph H. Pratt Diagnostic Hospital as a center, the fact that through this arrangement the smaller institutions, and the physicians connected with them, have the opportunity for consultant pathological service and for expert assistance in x-ray interpretation, the fact that any physician, whether connected with a hospital or not, can secure assistance in the diag-

nosis of difficult conditions and obtain whatever consultation with outstanding authorities, may be indicated, the fact that practicing physicians throughout the state have the continuing opportunity for postgraduate study of internal medicine, of pediatrics, of obstetrics—these and similar facts mean that the physician's opportunity to improve his own standard of service is afforded through the facilities for learning the latest improvements in medical knowledge and practice, no matter how isolated otherwise the physician may be. To the entire plan, I believe, may be accurately applied Dr. Proger's words, in commenting on a particular course for postgraduate training that it is "not an isolated experience in the physician's life but the beginning of a permanent opportunity for better work."

I have by no means mentioned all the opportunities that are tied into this general plan nor is it necessary that I should, but you will have noticed that I have repeated and stressed the word "opportunity", I believe it to be of utmost importance. Medical men can no more than others be forced to drink from the fountain of knowledge. Insofar as the plan is worked out along natural lines, through making it possible for the local hospital and the young country doctor to attach themselves by a mutual and entirely voluntary affiliation to the more effective, larger and better-equipped institution, and to the more experienced and highly trained medical authority there will be naturally woven a fabric of good medicine about this medical center here in Boston through which a great service can be rendered. The plan will demonstrate, and to some extent has already demonstrated, not only that good medicine is possible in the country but that it may be both soul satisfying and attractive to the young physician. Organizations and institutions which are formed to render a service to mankind all too frequently become an end in themselves then service becomes relegated to the background and is largely forgotten. If the Tufts program should as time passes, so develop as to become an end in itself and neglect the service which is its raison d'etre and this be interpreted as a plan for the aggrandizement of Tufts College Medical School and for the potential control of New England medicine, it will quite properly fail. Of that I see no sign, nor is there any reason why it should so develop. I hope to see Tufts greatly extend what has been so well begun. The evolving plan is, I believe, more constructive in its implications and potentialities than any artificial system for the distribution of medical care. What we need is medical care of high quality and a natural means of distributing it and of keeping it distributed. To that end Tufts is encouraging a valuable experiment and one from which I anticipate a considerable lesson may be learned.

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CLINICAL NOTE

MODIFICATION OF KAUFMAN SYRINGE FOR INTRAVENOUS WORK IN INFANCY

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ONE of the major factors in the improvement in mortality statistics in infancy and early childhood is the increased use of the intravenous

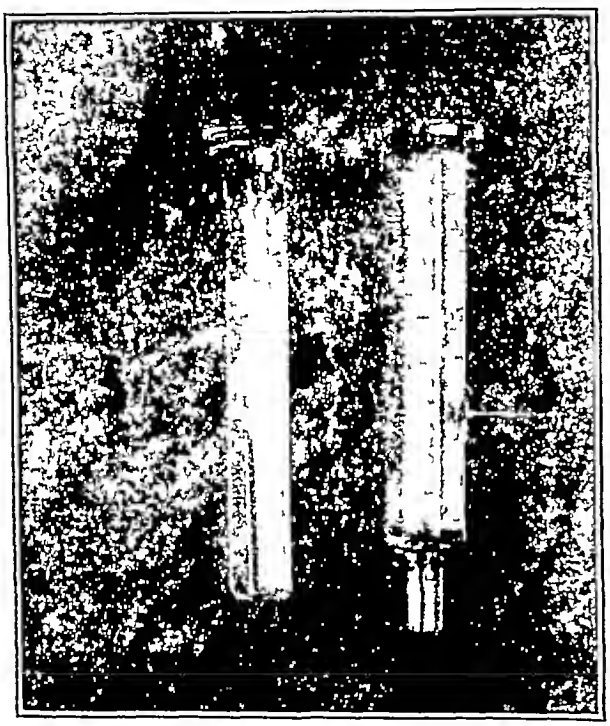

FIGURE 1 *Photograph Showing Groove in Plunger Which Here Is a Little Longer than Is Necessary*

route for administering water, electrolytes, glucose and blood Quite aside from mortality statistics, its value in alleviating suffering in many diseases and making smoother the convalescence following operation is many times worth the effort involved The problem of preparation and preservation of the various solutions has been greatly simplified by investigators working in collaboration with commercial drug houses

A second problem, that of successful venepuncture, must be solved by the individual operator who will use, if it is available, equipment to which he has become accustomed and which gives him confidence This factor is an extremely important one

One of the most widely used pieces of apparatus in the intravenous administration of fluids is the Kaufman side-arm syringe A few years ago, the syringe was modified by placing the side arm nearer the distal end of the syringe than it was in the original This proved to be a distinct advantage, especially in infants where the scalp veins are usually used But even with this modification the amount of blood which must be withdrawn before the fluid can start running is relatively large, and in the dehydrated, debilitated acutely ill infant this may necessitate repeated venipunctures and, hence, damage to veins that may be valuable for later use

To obviate this difficulty, the Kaufman syringe has been further modified by grinding a narrow shallow groove in that portion of the plunger which extends from the level of the side arm to the distal end † With this groove turned away from the lumen of the side arm, the needle is inserted into the vein and the plunger retracted When the drop or two of blood, which ensures that the needle is in the vein, has been drawn into the syringe, the plunger is rotated so that the groove is opposite (communicates with) the lumen of the side arm The solution to be administered then flows along this groove into the distal portion of the syringe, and permits the further withdrawal of the plunger beyond the level of the side arm and a continued free flow of fluid

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REPORT ON MEDICAL PROGRESS

DIABETES MELLITUS

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INCIDENCE

EVIDENTLY in this vicinity we have little realization of the struggles of diabetic patients elsewhere. Whereas our coma mortality for cases both in and outside the hospital has fallen in recent years to 6 per cent the duration of the disease has risen to eleven years and the mortality attributable to a complicating tuberculosis, despite the longer period of exposure, has remained constant around 5 per cent. Thus Ponteva[1] in Finland reports statistically on 86 patients treated before and 645 patients treated since the introduction of insulin in October, 1923. Mortality in the clinic in Helsinki fell from 19 per cent prior to 1923 to 7 per cent since that time, and the incidence of coma in the total mortality fell from 81 to 27 per cent. The ratio of the number of diabetic cases to the total cases in the clinic rose from 2.1 to 7.9 per cent, but the duration of hospitalization dropped from seven to four weeks. The mortality among the patients, subsequent to discharge and up to September 1, 1936, was 46 per cent. Pulmonary tuberculosis caused 19 per cent of the total deaths, and was thus a major factor in raising mortality rates and shortening the lives of patients. The duration of diabetes rose with age. It was three years among young people, three years and ten months in middle age, and five years and one month in old age. In contrast, the duration of life of patients recently consulting the reviewers had already reached on the average five years prior to their first visit, indirect evidence, by the way, of the excellent type of treatment afforded diabetic subjects by the general practitioner. This figure of five years also represents slightly more than our total longevity of diabetic patients between 1898 and 1914.

According to Ponteva, mortality was highest in rural districts and lowest in the cities, and evidently depended on the financial circumstances and education of the patients, but even among the educated the average total duration of the disease was only five years and four months. Lack of vegetables was widespread, only 10 per cent of the workmen who reported having had a sufficient quantity. Practically all patients requiring insulin received it, although 34 per cent were assisted financially.

Kesterman and Schuwicht[2] report 754 diabetic patients treated within the last decade at the University of Marburg. The mortality was 7 per cent. Of the 52 deaths 21 occurred in coma. The duration of the disease of those dying in the hospital was about four years, the average age being fifty-three, as compared with sixty-three years for 981 deaths from 1930 to 1935 in the above-cited American statistics.[3] Among 528 diabetic patients discharged and followed, 29.5 per cent died. The most frequent cause of death was circulatory insufficiency and the second most frequent was diabetic coma. Of the 372 survivors, 70 per cent were completely symptom free and able to work, and 10 per cent were completely incapacitated.

TRAUMA

A study of the effect of trauma in the etiology of diabetes has been made by Thomsen.[4] Suffice it to say that his conclusions support the theory that trauma can cause the disease only by producing injury to the pancreas so extensive that it is practically incompatible with life.

In this connection, Adlersberg and Dolger[5] have described the medicolegal possibilities arising from hypoglycemia subsequent to the use of insulin. Undoubtedly problems exist, but the reviewers believe that such complications are far less frequent than one might infer from a perusal of the article. However it is absolutely incumbent upon diabetic patients to avoid reactions. Those taking insulin should never drive an automobile without taking carbohydrate food every two hours.

WORKING CAPACITY OF DIABETIC PATIENTS

The long duration of the lives of diabetic patients today brings up the question of their ability to support themselves. The results of a survey of a group of 100 consecutive patients in England made by Lawrence and Madders[6] showed that

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with an average duration of five years of employment no time was lost by 39 per cent, time was lost only at initial stabilization by 38 per cent, for restabilization by 8 per cent and through diabetic illnesses by 15 per cent

Direct statistical evidence of this nature has not appeared in the United States, but figures bearing on the subject were collected by the reviewers and presented at the St Louis meeting of the American Medical Association in the form of charts Full-time capacity was reported by 63 per cent of the men and by 46 per cent of the women in a group of 653 patients between twenty and sixty-five, two-thirds capacity was reported by 27 per cent of the men and 34 per cent of the women

PHYSIOLOGY

Production of permanent diabetes with pituitary extract The outstanding work of Young,* in which permanent diabetes was produced in normal dogs by the daily intraperitoneal injection of crude saline extracts of the anterior lobes of beef pituitaries, has been confirmed by other investigators, among whom are Campbell, Keenan and Best[8] at the University of Toronto and Dohan and Lukens[9] at the University of Pennsylvania The Toronto workers found that in 2 of 3 dogs with experimental pituitary diabetes, total pancreatectomy produced little or no aggravation of the diabetic state The total insulin content of the pancreas in each of these 3 animals was less than 2 units, and 1 contained no detectable amount of insulin (The insulin content of the pancreas of normal dogs of comparable weight averages about 60 units) In all 3 animals widespread destruction of islet tissue was found, and no normal islets were found in the dog which had the most severe diabetes Similar degenerative changes have been described by Richardson and Young[10] Thus is attention, temporarily diverted, again focused on the pancreas as the seat of the disorder in diabetes

Dohan and Lukens studied the urinary glucose and nitrogen during fasting in dogs made diabetic by anterior pituitary extract The urine was sugar-free in some animals, but in others there was glycosuria of varying degree, occasionally reaching the level seen in depancreatized dogs The amount of nitrogen in the urine varied from levels seen in normal to those seen in depancreatized animals In studies of the respiratory metabolism, the basal oxygen consumption was found to be normal or slightly increased There was a marked rise in oxygen consumption after the feeding of meat or after glucose and insulin The respiratory quotient rose little or none after glucose

In his lecture, as yet unpublished in full,* given on April 20, 1939, at the Harvard Medical School, Young reviewed his findings regarding the pituitary diabetic dogs He finds that a daily intraperitoneal injection of fresh, crude, anterior pituitary extracts for eleven to twenty-six days causes diabetes, which then remains permanent, despite discontinuance of the injections In order for diabetes to be produced, the amount of extract injected must be regularly increased, starting with the extract made from 5 or 10 gm of anterior pituitary substance and increasing the amount every three or four days until extracts from 20 to 25 gm are being injected daily The glands and extracts must be kept constantly as close to 0°C as practicable Once diabetes has developed, the amount of insulin required for control of the diabetes is, in general, a little larger than that needed for depancreatized dogs, but there is this great difference if insulin is gradually withdrawn from the pituitary diabetic dogs, they will live for long periods, with gradual withdrawal of insulin from depancreatized animals, however, there soon comes a time when acidosis and coma intervene and death occurs

Young has been unable to produce diabetes of this type in animals of any species other than the dog In rabbits a state of insensitivity to insulin may be set up In rats hypertrophy rather than degeneration of the islet tissue is seen, this proliferation of the islet cells may precede, in the dog, the exhaustive or degenerative changes which accompany the onset of permanent diabetes Dohan and Lukens[9] report that pituitary diabetes can be produced in the cat by the removal of part of the pancreas before treatment with anterior pituitary extract, and Long[11] and his co-workers at Yale University have had a similar experience with partially depancreatized rats

Relation of the pituitary and adrenal glands to carbohydrate metabolism Soskin, Levine and Lehmann,[12] using eviscerated animals, obtained results which they interpret as indicating that the apparent increased disappearance of sugar in fasting hypophysectomized animals is due, not to increased utilization in the tissues, but to a markedly diminished glyconeogenesis in the liver which allows a depletion of the carbohydrate stores, in spite of a diminished utilization They believe that the so-called "glycostatic" effect of pituitary extracts is due to an increased formation of carbohydrate in excess of the amount being utilized, which results in an increase in the carbohydrate stores

Marshak, Fernald and Marble[13] found that fasting for forty-eight, seventy-two and ninety-six hours caused no greater decrease in the blood sugar

*Abstracted in the *New England Journal of Medicine* (221:81 1939)

of hereditary dwarf mice — which lack the acidophil cells of the anterior lobe of the pituitary gland — than in that of normal mice. Assuming that the hypophysis secretes a hormone which contributes to the maintenance of a normal glycemic level their results demonstrate that the presence of the acidophil cells is not essential for this function

Chambers, Sweet, Chandler and Lichtman,[14] working with depancreatized dogs, found the same low level of carbohydrate metabolism after adrenal ectomy as after hypophysectomy With both types of doubly operated animals the basal respiratory quotient was low (0.75) and rose significantly after the administration of glucose in only a small percentage of the animals (one third of the hypophysectomized and one sixth of the adrenalectomized animals)

Effect on pancreas of continuous intravenous injections of dextrose Woerner,[15] working in the Department of Anatomy at the University of Chicago, found that as the result of continuous intravenous injections of dextrose into normal guinea pigs for as long as twenty-eight days at first the beta granules in the islands might be exhausted following which there might be an increase in island tissue and in the number of beta cells After this there might be a third stage in which degenerative changes occurred in both alpha and beta cells in the form of hydropic degeneration, and also in the acinar cells in the form of swollen and fatty mitochondria

Action of extracts of alpha cells of pancreatic islets Bensley and Woerner[16] prepared from guinea-pig pancreases aqueous extracts which they regard as alpha-cell extracts When such an extract was injected intravenously into a guinea pig for twenty four hours, there occurred an increase in liver fat, a decrease in liver glycogen and a loading of the alpha cells of the islands of Langerhans with granules. When dextrose was injected along with the alpha-cell extract the fat was removed from the liver, the liver cells stored glycogen, the beta cells appeared actively secreting and somewhat exhausted, but the alpha cells contained many granules Bensley and Woerner suggest that the alpha cells of the pancreatic islets secrete a substance which is concerned with fat metabolism, and speculate as to the identity of this secretion and the substance which Dragstedt and co-workers[17] have described under the name of "lipocaine."

INSULIN

In 1938 appeared the monograph by Jensen[18] entitled *Insulin Its chemistry and physiology* In this volume of 252 pages the important investigations up to 1938 are summarized It is a valuable reference book for those interested in diabetes and carbohydrate metabolism

Crystalline insulin Although the crystalline type of insulin was released for general sale in August, 1938 there has been much disagreement as to its rapidity of action and duration of effect This insulin is a clear solution acid in reaction, and dispensed under the name of 'insulin specially prepared as solution of zinc insulin crystals" Studies carried out recently by Marble and Vartiainen[19] have shown that a solution of zinc insulin crystals on the average exerts a slightly greater hypoglycemic effect and a slightly more prolonged action than does insulin made from amorphous material Both insulins, however, produce a rapid fall in blood sugar and must be regarded as preparations with rapid action and short duration of effect The differences between the effect of regular insulin and of zinc insulin crystals, particularly as seen in the day-by-day maintenance of diabetic patients, are of relatively minor importance Protamine zinc insulin remains the slowly acting long lasting insulin of choice.

Effect of diet on the insulin content of the pancreas Using groups of 10 normal rats, Haist, Ridout and Best[20] carried out investigations intended to demonstrate the influence, if any, of dietary changes on the insulin content of the pancreas Under normal conditions the pancreatic tissue from 10 rats yields from 20 to 30 units of insulin For the assay of insulin content mice are employed using from 200 to 300 animals for each sample of insulin-containing extract Using these procedures, it has been found that starvation produces a very definite decrease in the insulin content of the pancreas Diets very rich in fat cause a marked diminution in the insulin content, those rich in carbohydrate do not lead to a decrease. The results published so far are of a preliminary nature, and the outcome of the studies now in progress will be awaited with interest because of possible clinical applications

TUBERCULOSIS

The 19 per cent mortality from tuberculosis among diabetic patients in Finland has already been cited[2] Himsworth[21] in an analysis of 230 consecutive diabetic patients on their first hospital visit, found 15 cases of tuberculosis, of which 13 could be diagnosed only by x-ray examination He states that pulmonary tuberculosis and true diabetic cataracts are particularly prone to occur together in young patients whose diabetes is not well controlled In a recent summary of 364 dia

betic cases by Root and Bloor,[22] the outstanding fact still is the great susceptibility to pulmonary tuberculosis of diabetic children, exceeding by at least twelve times the frequency observed among pupils in Massachusetts grammar and high schools Actually, Joslin[23] found that among 104 children who had had diabetes ten years or more, 40 per cent of the deaths were due to tuberculosis Analysis of the lipoids of lung tissue of 26 diabetic patients at autopsy reported by Root and Bloor showed a range for cholesterol of 0.23 to 0.54 per cent Of the 26 diabetic patients, 15 had cholesterol values of over 0.35 per cent, and it was in this group that 6 of the patients with quiescent, apical tuberculosis, were found A striking fact, however, was that many patients showed a low value for phospholipid

SURGERY

The value of a continued and specialized interest in the diabetic problem by a single group is repeatedly illustrated, as in the summary of two years of diabetic surgery by Rabinovitz and Weisman[24] and the report by John [25] In John's series, including 983 major operations and 290 minor operations, the mortality was 10 per cent for the former and 1 7 per cent for the latter, or an average of 5 8 per cent He stresses the necessity of medical attention during diabetic surgery, including the use of insulin before and after operation, a diet suitably arranged, and the liberal use of intravenous injections of physiological saline solution The water metabolism in diabetes and the many-sided functions of the liver are emphasized Hepatic glycogen must be conserved, since it represents that portion of body glycogen most easily available for use by the body and also most easily exhausted Thus, one of the great problems in surgery requiring ether anesthesia is how to provide so sufficient a store of glycogen in the liver that the patient may withstand the depleting effects of an ether anesthesia, which may be more prolonged than was originally anticipated

The importance of gall-bladder disease as a cause of diabetes has probably been overestimated Nevertheless, when infection is present in the gall bladder the diabetes may be aggravated and be correspondingly improved by surgical treatment, as John points out Leriche and Jung[26] report experiments on animals and observation of a human case designed to show whether constant and prolonged drainage of the gall bladder would affect the islands of Langerhans and clinical diabetes In 17 adult dogs ligation of the common duct and constant drainage of the gall bladder for periods varying from six days to four months resulted, in a majority of the dogs, in increased density of the islands of Langerhans, the islets presenting a pronounced vascular congestion Th patient was a woman of thirty-one with rece diabetes and vague pain in the abdomen Trea ment with insulin, from 80 to 100 units a da failed to control the diabetes In April, 1937, th gall bladder was opened, and continuous draina was instituted, which resulted in the removal about 300 cc of bile per day From April to Jun the patient continued sugar-free without insuli In July, 1937, she seemed completely cured, havi gained in weight and feeling entirely well Th remarkable improvement justified removing th drain However, shortly the sugar returned a in three months the patient was requiring units of insulin Leriche and Jung concluded th surgical treatment of diabetes should still be co sidered, possibly drainage by attaching the g bladder to the jejunum

The use of the negative-pressure boot at fi seemed to promise a means of stimulating the c culation It is contraindicated in John's[25] expe ence, however, as well as in McKittrick's,[27] in p tients with moist gangrene or spreading infectio lymphangitis, thrombophlebitis, varicose veins edema

The question of whether diabetic gangrene increasing or diminishing under the influence improvement in diabetic treatment is difficult answer The increasing length of duration diabetic life and the great increase in hospi treatment must be considered in the analysis, as especially well shown in the article of Hunter who cites certain statistics from King's Colle Hospital, London Thus, between 1919 and 19 the total number of diabetic admissions to th hospital was 68, with 2 cases of gangrene. B tween 1933 and 1937, on the other hand, the nu ber was 730, with 39 cases of gangrene

Duncan[29] summarizes the treatment and cou of 136 cases of diabetes with acute complicatio In 13 of the 23 deaths, diabetes was considered t contributory cause It is difficult to agree wi Duncan's general statement that diabetes of its is not a fatal disease It is true that the fin illness is usually a complicated one, but in a gre majority of cases it is impossible to say that t diabetes itself has not contributed either direct or indirectly to the death

JUVENILE DIABETES

The "free" diet has many advocates, and it mu be acknowledged that in many instances the wo thing about it is its name Stolte[30] has re-describ his management with the free diet, and repo good results Lichtenstein[31] reports 50 juven diabetics transferred from a low-carbohydrate d to a free diet containing from 150 to 200 gm carbohydrate daily Bojién[32] also advocates the fr

liet and reports 16 children who look well, feel vell, and usually have no acetonuria Development s normal. Two had coma or pre-coma. Raiha[32] ummarized the cases of 162 diabetic children reated in the University Children s Clinic, Helsinki, Finland, between 1922 aod 1933 The nortality was 63 per cent! This high mortality was robably due to lack of close medical supervision i a sparsely populated country In the fall of 1934 he policy of treating all diabetic children without estriction of diet was inaugurated by Raiha. Forty our patients so treated are reported The fasting lood sugar was 250 mg or more The twenty our hour excretion of sugar averaged 100 gm nd occasionally reached 250 gm The volume f urine ranged from 1500 to 3000 cc. in twenty our hours The concentration of sugar varied from to 9 per cent. Acetone, except in traces, seldom ppeared in the urine. The mortality of the 44 atients was 16 per cent! The chief cause of death as regarded as hypoglycemia Nutrition growth id development were satisfactory The paients ithstood infection without difficulty

In contrast to Rāihā s management is that of oyd and Jackson,[34] who advocate perfect control diabetes aimed at avertung degenerative complitions. Using perfection as the standard of suc ss, these authors were unable to use protamine nc insulin successfully White[35] reports results in ildren in whom the prescribed regime was reg ated as follows 1000 calories at age one, plus 0 per each year of life up to thirteen years for rls and nineteen for boys, with gram ratios of 2.0.P,0.9.F,1.0 Because of this discussioo of the lue of free diet it is fortunate to find that comrative analyses are being made in some clinics. ius Nelson and Ward[36] present data which they interpret to indicate a fairly wide range within which the dietary allowance of diabetic children may be varied

Hungerland[37] reports confirmation of the experi ments of Fanconi with a low-proteio maintenance diet. Dunlop and Pybus[38] advocate carbohydrate to stimulate endogenous insulin production

Insulin End results of treatment with protamine insulin in 604 patients with ooset in childhood were reported by White.[39] The experience covered the period from September, 1935 to September 1937 At that time, 9 patients were untraced 4 had died and 17 had discootinued its use. Ninety per cent required regular iosulin aloog with protamine zinc insulin, given as a separate injection simul taneously with it before breakfast In order to avoid the cumulative action of the two drugs, the standard for control of diabetes was held at 90 rather than 100 per cent based on the relauon of sugar output to carbohydrate intake The incidence of coma and of hepatomegaly has decreased

In order to refute the objections to the use of protamine zinc insulin, namely that diabetes is not adequately controlled, that liberal diets cannot be used and that fluctuations of glycosuria occur and reactioos of severity are inevitable, White and Winterbottom[40] summarized the records of 123 girls treated at a summer-camp uoit.

Complications Dwarfism in diabetic children has aroused much interest because of the fact that the coodition appears to be a cootradiction to the experiments of Houssay, Evans and Young Beck and Suter[41] report a case classified as pituitary dwarfism which showed good results when an terior pituitary treatment was used Boyd and Kantrow[42] report retardation in 6 per cent of their juvenile diabetics They consider the etiology faulty nutritioo, and believe that adequate nutri tion will correct the condition White,[43] sum marizing endocrine manifestations in juvenile diabetes among 1250 patients, reports 94 dwarfisb diabetic children and suggests that the possible ex planation is change in the activity of the pituitary from hyperactivity at onset to hypoactivity after several years duration anti-growth hormone production or congenital lack of growth and pan creatropic (anti-diabetic) factors Good results with anterior pituitary extract, alone and with thy roid extract and with thyroid extract alone are reported The best results were obtained when anterior pituitary extract was supplemented with thyroid extract Other evidence of pituitary thy roid adrenal and gonadal involvements is discussed

Boucomont Serre and Godlewski[44] have published a case which they consider to be one of glycogen storage disease. Stetson and Ohler[45] report a most valuable case of hepatomegaly the only juvenile one with biopsy findings The liver showed essentially normal structure. The nuclei contained no glycogen, but there was a large amount of intracellular glycogen There was no increase in the deposition of fat The amount of glucose laid down as glycogen was tremendous. Impairment of glycogenolysis rather than glycogenesis was considered responsible. The patient showed great tendency to ketonuria

Pathology The pathology of juvenile diabetes is summarized in Warren s[46] monograph Devine[47] reports the case of a child twenty five days old with diabetes—only 3 cases of younger children have been recorded in the literature—in which there was hypoplasia of the islets.

PREGNANCY

That labor has only a slight effect on the blood sugar of normal subjects is reported by DeCamp [48]

The average fasting prenatal blood sugar was 87 mg per 100 cc The rise during labor was 20 mg The highest was 151 mg, and the lowest 68 mg

High fetal mortalities in diabetic pregnancies are reported by Brandstrup and Okkels[49] Of 23 births only 10 infants left the hospital alive Johnstone[50] reports no maternal but high fetal mortality Potter and Adair[51] analyzed the statistics of the Chicago Lying-In Hospital and found the incidence of diabetes to be 1 in 900 deliveries The maternal mortality was 6 6 per cent The fetal mortality in late pregnancy was 31.3 per cent Toxemia occurred in 50 per cent of their cases They conclude that death of the infant before delivery is due to transmission of metabolic products which interfere with the normal physiologic functions of the infant Control of diabetes is stressed Herrick and Tillman[52] report 56 patients with 67 pregnancies Fifteen patients had onset during pregnancy Twelve had toxemia, 32 had stillbirths, neonatal deaths or abortions Antoine[53] reports 50 per cent failures in diabetic pregnancies

In contrast to these views White[35] reports 34 cases in which the hormones had been studied by Smith and Smith and the prolan, in part, by White and Hunt Of 14 patients with normal values, there was 1 fetal death, in 12 with high values, 4 deaths, and in 8 with high values who received substitutional therapy in the form of replacement doses of estrin and progesterone, 1 death This latter occurred in a patient whose treatment was omitted The hypothesis is given that stillbirth miscarriage, premature labor, fatal asphyxia and gigantism are all related to prolan-estrin imbalance

Smyth and Olney[54] report autopsy findings of a stillborn infant of a diabetic mother There was advanced bone age, more mature genital tract development, hypertrophy and hyperplasia of the islands of Langerhans, cystic degeneration of the ovaries with large and small abortive graafian-follicle cysts and advanced development of the pituitary and thyroid glands and endometrium

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NEW HAMPSHIRE MEDICAL SOCIETY

PROCEEDINGS OF THE

ONE HUNDRED AND FORTY EIGHTH ANNIVERSARY

House of Delegates, June 7, 8 and 9, 1939

THE House of Delegates convened at the Hotel Carpenter, Manchester on Wednesday evening June 7, 1939, at 7.30 with Speaker W J Paul Dye, of Wolfeboro presiding

The following members answered the roll call

The President, ex-officio
The Secretary Treasurer ex-officio
Chester L. Smart, Lacoota
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Osmon H Hubbard Keene
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Henry C. Sanders, Jr., Claremont
Addison Roe, Newport

SPEAKER DYE Will Dr Smart and Dr Clare please act as the Credentials Committee?

The minutes of the last meeting are published in the 1938 transactions of the New Hampshire Medical Society What is your pleasure about reading these minutes?

DR. F J C DUBE I move that the reading of the minutes be omitted

This motion was seconded and was carried

Report of the Secretary Treasurer

The following report for 1938 is herewith submitted

MEMBERSHIP DECEMBER 31 1938

Belknap County	32
Carroll County	16
Cheshire County	30
Coos County	38
Grafton County	61
Hillsborough County	127
Merrimack County	76
Rockingham County	57
Strafford County	33
Sullivan County	18
Not in county society	6
	494
Affiliate members	25
Honorary members	12
	37
Total	531

The total membership on December 31 1937 was 488

FINANCIAL STATEMENT

Receipts

January 1 1938. Balance forward	$942.14
Net receipts annual meeting	246.24
Belknap County	192.00
Carroll County	96.00
Cheshire County	174.00
Coos County	258 00
Grafton County	348.00
Hillsborough County	756.00
Merrimack County	432.00
Rockingham County	432.00
Sullivan County	114 00
Strafford County	222 00
Benevolence Fund (Women's Auxiliary)	50.00
Members not in county societies	36.00
Cash received at annual meeting	49 00
	$4347.38
1938 dues deposited 1/20/39	30 00
	$4317.38
1937 dues deposited 1/14/39	84.00
	$4233.38

Expenditures

New England Journal of Medicine (cuts and tables)	$10 16
New England Journal of Medicine (copies to members)	402.71
New England Journal of Medicine (transactions)	407 43
New England Journal of Medicine (journals)	137 35
New England Journal of Medicine (cut Dr King)	3 44
Carleton R. Metcalf (salary)	400.00
Bridge and Byron (printing)	97 50
Postage and envelopes	178.83
Clerical work	78 00
Eagle and Phoenix Hotel Co. (committee lunches)	12.80

R O Blood, treasurer (telephone and telegraph calls)	14 28
Women's Auxiliary	100 00
Benevolence Fund	126 50
The Robbins Company (gold medals)	45 57
Frank J Sulloway (retaining fee)	100 00
George C Wilkins (Cancer Committee)	60 00
Colin C Stewart (Child Health)	50 00
Frederic P Scribner (committee expenses)	4 15
Concord Photoengraving (half tone cuts)	18 28
Dartmouth College (Commonwealth Fund)	6 35
The Barwood Press (Committee on Medical Education and Hospitals)	10 25
Florence McCann (Committee on Medical Education and Hospitals)	21 45
Edna Walch (telephone calls, Strafford County)	3 50
American Medical Association (*American Medical Directory*)	15 00
Deering G Smith (A M A expenses)	259 40
State of New Hampshire (certified copy of charter for A M A)	1 00
Eastman Kodak (film at annual meeting)	9 00
Hayes E. Martin (expenses, annual meeting)	29 50
I S Ravdin (expenses, annual meeting)	33 30
Walter Bauer (expenses, annual meeting)	4 85
Madeline A May (stenographer, annual meeting)	300 27
Madeline A May (stenographer, Dr Fishbein's address)	37 80
	$2928 67
Cash received at 1938 meeting	49 00
	$2977 67
1938 dues deposited 1/20/39	30 00
	$3007 67
Checkbook balance 1/1/39	1063 47
	$4071 14
1937 dues deposited 1/14/38	—84 00
	$3987 14
Net receipts, 1938 annual meeting, deposited 2/21/39	246 24
	$4233 38

The society is in good financial condition with all its debts paid On January 1, 1939, there was a balance in the bank of $1063 47 On this same date the Benevolence Fund amounted to $1794 06 During the past year we received $50 00 for this fund from various women's auxiliaries The only officer of the society who has died during the past year was Charles A Weaver, of Manchester, a long time member of the Committee on Mental and Social Hygiene.

For the two appointive offices which lie within the province of your president, Dr Coburn chose these men for Anniversary Chairman, Ezra A. Jones, of Manchester, and for a member of the New England Medical Council, Robert H Brooks, of Claremont.

I offer the following report concerning the recommendations which were made by the House of Delegates a year ago

1 A check for $100 00 was sent to Frank J Sulloway, our legal adviser, and this sum is to be given to him annually until further notice.

2 The sum of $50 00 was given to the Committee on Child Health and the sum of $60 00 to the Committee on the Control of Cancer

3 The Necrologist has been advised that he should submit an annual report to the House of Delegates, and ten councilors from the county societies have been reminded that they have the same duty to perform

4 If you have read carefully the program for this year's meeting, you will notice that there are to be no set discussions of the papers presented each afternoon by our invited guests, although questions may be asked in each instance from the floor This change ought to make the meeting move at a faster pace.

The work of two of our committees, not otherwise reported, deserves mention The Advisory Committee on Jurisprudence has met three or four times during the past year and has been up to the minute in considering real or threatened cases of malpractice If a case of this kind is handled promptly and judiciously, it can frequently be aborted

Since the Legislature is in session, the Committee on Public Relations has been active. The work of this committee has been extremely satisfactory because Dr Blood is president of the State Senate He has been of great help

Here are some of the experiences of the Committee on Public Relations

1 We heard a rumor that the town and city clerks were not entirely satisfied with the law requiring a blood test before marriage I asked permission to sit in at one of the meetings of their executive committee and later we had a second meeting with the assistant attorney general The clerks were not opposed, in general, to the idea of a blood test, but they had had difficulty with the interpretation of two or three statements in the law We were able to have these interpreted to their satisfaction.

2 At the request of the optometrists, we supported their bill to limit the activities of cut rate competitive establishments controlled by out-of state owners and run by poorly trained clinicians This bill failed to pass

3 We heard that a representative from Laconia proposed to offer a bill for compulsory health insurance affecting every citizen of New Hampshire. The contents of the bill made the ideas on this subject emanating from Washington seem tame.

We told this legislator that his bill would not pass and suggested to him that he introduce in its stead a bill for group hospitalization insurance, prepared by the Hospital Superintendents' Club A day or two thereafter the bill was thus introduced

Incidentally the Hospital Superintendents' Club is now making arrangements to form an organization to offer group hospital insurance under the terms of this new legislation

4 The committee supported the bill which requires that each candidate for a medical license in New Hampshire must be an American citizen A citizen of Canada who lives in a province which reciprocates with New Hampshire is excepted This bill passed

5 We opposed the Federal Narcotic Law which would shift to the State the responsibility and expense of enforcing a mass of rigid legislation concerning narcotics We felt that there was no appreciable narcotic problem in New Hampshire, that the federal law contained altogether too much red tape, and that there

was no reason why the State should pay for doing a job which the Federal Government is now doing to everyone's satisfaction.

The commissioner of the Department of Public Welfare asked several ophthalmologists who are members of the society to advise him informally and unofficially in the care and treatment of the needy blind. The doctors responded willingly and the commissioner now wishes the House of Delegates to appoint them officially as an advisory board. These men receive their traveling expenses but do not receive a salary.

Last fall your secretary spoke at the annual convention of the New Hampshire Pharmaceutical Association at Bretton Woods. His subject was "Socialized Medicine." He did not approve of it. This venture was responsible in part, I believe, for the fact that we have had the cooperation of the druggists to supporting or opposing some of the legislation that I have enumerated, and we, in turn, have agreed to support pharmacy legislation which seems proper and constructive. The Dental Association and Hospital Superintendents Club are also ready to cooperate with us. In these days of unrest at Washington, with the Wagner Bill to the fore it seems highly probable, as a wise old philosopher Ben Franklin once said that "We must all hang together or assuredly we must all hang separately."

We have tried as you remember to lend a helping hand in the Washington melee by sending two or three questionnaires to all the members of this society. The American Medical Association feels that the information thus gleaned will be of material help in opposing or in modifying the Wagner Act.

One more thought. I have been approached by the proprietor of the Soo-Nipi Park Lodge on Lake Sunapee, who wants us to hold our annual meeting some time or other at his hotel. He assures me that he can give us all the space we need and can quote a reasonable rate. If a meeting were held there, it would presumably come about the time that our present meeting has come, in the middle of June.

In Maine, state medical meetings are often held at a summer resort. They draw a large attendance and seem to be very successful. I should rather like to try it some time here in New Hampshire.

CARLETON R. METCALF *Secretary*

DR. C. E. DUNBAR. The Committee on Officers' Reports desires to express its approval of the plans of our secretary to speed up the annual meeting and his methods of co-operating with the dentists, druggists and hospital authorities.

The Advisory Committee on Jurisprudence and the Committee on Public Relations are to be congratulated on their good work.

We recommend that an Advisory Committee on the Care of the Needy Blind co-operate with the Commissioner of the Department of Public Welfare.

I move the adoption of this portion of our report.

This motion was seconded and carried.

DR. DUNBAR. We recommend that future meetings of the State Society be held in April or May, and that the 1940 meeting be held in Manchester.

I move the adoption of this portion of our report.

This motion was seconded and was carried.

DR. DUNBAR. The Committee on Officers' Reports wishes to express its appreciation to the various officers and committee members. We have reports from nine of the ten councilors. We recommend that these reports be accepted.

I move the adoption of this portion of our report.

The motion was seconded and was carried.

SPEAKER DYE. I am going to ask that the councilors' reports be read.

Councilor's Report for Sullivan County

The Sullivan County Medical Society enjoyed two meetings during the past year both of which were well attended and very enthusiastically received. Membership for the year of doctors practicing in the county was 100 per cent.

The first meeting in the summer was held at New Port. Dr. H. G. Lee, of Boston, gave a very interesting talk on "Low Back Pain." We also had as a guest at this meeting Dr. G. E. Hoffses of Manchester. The Carrie Wright Hospital provided an excellent luncheon.

The winter meeting was held in Claremont. Luncheon was served at the Claremont General Hospital. This meeting was attended by Dr. Clarence O. Coburn president of the New Hampshire Medical Society. Dr. Coburn outlined the problems of the New Hampshire Medical Society and spoke especially of the necessity of all doctors carrying liability insurance.

EMERY M. FITCH

Councilor's Report for Merrimack County

On July 6 1938 a luncheon meeting was held at The Inn in New London, with Dr. William Clough presiding. Dr. Sawyer of Colby Junior College, explained the medical secretarial course given by the school. The object of the course is threefold: to give a broader educational training to teach the students medical technology and to teach laboratory technic—they do not attempt to train technicians. Dr. James B. Woodman spoke briefly and Dr. John H. Munro, of Sunapee, brought greetings from the Sullivan County Medical Society. Dr. Lewellys F. Barker of Baltimore, spoke of his early experiences and reviewed briefly newer methods of treatment.

The September 14 1938 meeting was held at the Eagle Hotel, Concord. A request from the Merrimack County Commissioner's office, that mileage fees on relief cases be reduced from 15c to 10c a mile, and that payment for county hospital patients be eliminated, was discussed. It was voted not to accept these propositions.

It was voted that the society recommend to the Concord City Government that physicians be paid for care of city cases in hospitals, not taken care of by the city physician in the same manner as county cases are now paid for.

Dr. Jules Weinberg, Dr. Philip Forsberg, Dr. Alfred Frechette and Dr. Mary Atchison were admitted to membership.

On January 4 1939 the annual meeting was held at the Eagle Hotel and the following officers were elected

president, Joseph D Shields, Concord, vice president, Frank J McQuade, Franklin, secretary treasurer, Warren H Butterfield, Concord, censors, Harold Levine (3 years), Henry H Amsden (1 year), delegates, Warren H Butterfield, Charles H Parsons, William P Clough, auditors, Harold W Epling, Eugene Chamberlain, member to Council, Henry H Amsden (3 years) Dr Raymond Galloway, of Suncook, was admitted to membership

Mr Kenneth E Pohlmann explained the Federal Farm Security program for medical care of farm families After a heated discussion, the matter was postponed until the spring meeting for further action.

At the spring meeting, held on April 5, 1939, Dr Ralph S Keyes of Penacook, was voted into membership Dr Herbert Messinger, Dr Edward Putnam and the secretary, ex-officio, were appointed as a relief board for Merrimack County The matter of Federal Farm Security endorsement was indefinitely postponed Dr Edward Roberts of Lederle Laboratories presented and discussed a color film on allergy

HENRY H AMSDEN

Councilor's Report for Hillsborough County

The thirty fourth annual meeting of the Hillsborough County Medical Society was held on November 1, 1938, at the Rice–Varick Hotel, Manchester At this date, the society numbered one hundred and thirty four members, but since then six new ones have been admitted, making a total of one hundred and forty

The president of the New Hampshire Medical Society, Dr C O Coburn, gave a very interesting address about the American Medical Association's study of medical care, legislative accomplishments, hospitalization insurance, and the New England Postgraduate Assembly Dr D G Smith, delegate to the American Medical Association's meeting, spoke on the American Medical Association's position on socialized medicine, saying, it favors decentralization of the care of the indigent, hospital insurance, and voluntary health insurance but opposes compulsory health insurance' Dr B E Sanborn, president of the Hillsborough County Medical Society, read an excellent address concerning changes in the practice of medicine. Honorable Charles W Tobey spoke on 'World Trends from a Non Partisan Standpoint.' Dr Robert S Palmer, of Boston, gave a paper on Current Problems in the Diagnosis and Treatment of Essential Hypertension'

During the year we lost a charter member of our society, Dr Charles A Weaver, of Manchester

On May 9, 1939, the twenty seventh semi annual meeting of the Hillsborough County Medical Society was held at the Nashua Country Club After a brief business meeting the morning session was taken up by a paper by Mr Kenneth E Pohlmann, of Boston, the subject of which was Group Medical Care in New Hampshire for Clients of the Farm Security Administration'

After a prolonged discussion, the matter was tabled by a unanimous vote of the society, and the councilors were instructed to oppose this plan.

During the afternoon session, Dr Alexander Marble, of Boston, read a paper on 'Treatment of Diabetes in Hospital and Home.' Dr Arthur M Greenwood, of Boston, read a paper on 'Diagnosis and Treatment of Skin Lesions'

TIMOTHY F ROCK

Councilor's Report for Rockingham County

Rockingham County Medical Society held two regular meetings during the past year—the first at the Exeter Hospital and the second at the Portsmouth Hospital

At these meetings various case histories were read and discussed, and x ray plates exhibited Papers were read on various subjects, and generally discussed

The annual meeting was held in October

HERBERT L TAYLOR.

Councilor's Report for Strafford County

The Strafford County Medical Society, for the ye 1938, had thirty seven active members and one affilia member Four of the thirty seven were new membe and one a transfer from an adjacent county

There were three meetings held during the year Th first was a special meeting on February 9, 1938, at whic Dr Sven M Gundersen, of Hanover, presented the "Ne Hampshire Pneumonia Program" This meeting was w attended The second was the spring meeting at the Cu Hotel in Rochester, on April 27, at which twenty-or were present. At this meeting, four members were vote to affiliate membership and one new member was a cepted Dr Herbert D Adams, of the Lahey Clini spoke on "The Acute Abdomen" The one hundre and thirty first annual meeting was held at the Hay croft Inn at Barrington, October 26 There were twent one present. Two members were voted to affiliate mer bership At this meeting Dr Coburn, president of th New Hampshire Medical Society, spoke. Dr Deering C Smith, of Nashua, reported on the special meeting of th House of Delegates of the American Medical Associatio Dr Franklin N Rogers, of Manchester, read a paper o "A Physician's Responsibility to the Growing Child fro Birth to Adolescence."

There were no deaths in 1938

With the advent of the year 1939, we find Straffor County Medical Society with twenty nine active membe and several state members One active member ha moved out of the State We regret the loss of our olde memb Dr R G Blanchard, of Dover, who died o January 12, 1939, at the age of eighty-six Dr Blanchar came to Dover shortly after his graduation from Bowdo Medical School in 1884 and had served this communi continuously and well since that date.

The spring meeting, held at the American House i Dover on April 26, 1939, by all intents and purpos should be included in the report for 1939 Twenty thre members were present. Very little business was transacte at this meeting, one member being appointed to affilia membership and a new auditor appointed to fill the v cancy created by Dr Blanchard's death The rest of th time was devoted to a talk by Dr Frank Barton, of th Massachusetts Memorial Hospitals, Boston, on "The Us of Placental Blood for Transfusions" It included a bri history of blood banking and a discussion of the curre procedures in the collection of blood and its use, and wa accompanied by very fine colored moving-picture films.

We might add that every member's dues have bee paid on time for both years, 1938 and 1939

JOHN A HUNTER.

Councilor's Report for Coos County

The Coos County Society is in a very good condition We have forty-one members in good standing Ther are, I think, four others in the county that are not mem bers, but these are men that have only recently com among us and will probably join us later

We have had only one meeting this year which wa held in Berlin, with good attendance. Dr Frost, o Hanover, was the speaker Our second meeting will b

held soon after the state meeting and an exceptional program has been arranged.

RICHARD E. WILDER.

Councilor's Report for Carroll County

Two county medical meetings were held during the past year with excellent attendance.

The first meeting was held in Wolfeboro in December and Dr Mendelson of Dover gave an interesting talk on "Socialized Medicine as Practiced in Germany."

The second meeting was held in Ossipee in April of this year The meeting was attended by Dr Coburn, president of the New Hampshire Medical Society Dr Clark, of Lewiston Maine talked on certain aspects of radiology supplementing his talk with x-ray films.

It was suggested by Dr Clow that, since the year 1941 will mark the one hundred and fiftieth anniversary of the New Hampshire Medical Society the members of the Carroll County Medical Society propose a motion in the House of Delegates to the effect that the president of the state society appoint a committee to draw up a tentative plan for a suitable program At this meeting the possible pitfalls of the much-discussed Wagner Bill were also considered.

JAMES E. BOVAIRD.

Councilor's Report for Belknap County

The Belknap County Medical Society holds six meetings yearly from November to April inclusive, on the second Tuesday of the month at six-fifteen in the afternoon. The Auxiliary holds meetings at the same time and place, and this apparently helps the attendance.

The society has thirty three members and the average attendance at the meetings is in the twenties.

We have had a quiet but prosperous year

CLIFTON S ABBOTT

Councilor's Report for Grafton County

The Grafton County Medical Society has followed the usual custom of holding semiannual meetings.

The regular annual meeting with the election of officers, was held in October at the Mary Hitchcock Memorial Hospital Hanover Dinner was served at the hospital and an interesting scientific program was presented.

The spring meeting was held on May 25 at the Grafton County Hospital Woodsville. Mr Kenneth E. Pohlmann of the Farm Security Administration presented the Farm Security Administration's plan for medical care of low income farm families. The scientific program was the presentation of the subject of "Lead Poisoning" by Dr Ralph Hunter of Hanover and Dr John C. Eckels, of Lisbon.

ARTHUR W BURNHAM.

SPEAKER DYE I now appoint for the Nominating Committee Chester L. Smart chairman, Norris H Robertson Leslie K. Sycamore Deering G Smith and Fred Fernald

Report of the Delegate to the American Medical Association

Three well-attended sessions of the American Medical Association have been held since the last meeting of the New Hampshire Medical Society Unprecedented unity and harmony were present with no sign of dissension or revolt in the House of Delegates. This was undoubtedly due to the federal indictment of the American Medical Association and the proposal to socialize the practice of medicine. The physicians of the country are supporting the American Medical Association in increasing numbers as is shown by a membership gain of about four thousand in each of the last two years. On May 1, 1939 the membership was 113113.

Your delegate served as chairman of the Reference Committee on Credentials and at the San Francisco session attended the meeting of Associated State Committees on Postgraduate Medical Education. It was stated that the initiative for postgraduate instruction should come from the profession and that it should be centered in the medical schools with the hospitals co-operating After considerable discussion of the manner in which postgraduate instruction is being given in the various states, it was voted that the medical profession accept co-operation from the state and federal groups in giving postgraduate instruction and that this should always be done under the direction and control of the state medical societies.

The San Francisco session which was held June 13–17 1938, was the best attended and the most interesting session that has been held on the Pacific coast. The report of the Board of Trustees was as usual very interesting and instructive. It showed what the association is endeavoring to do to assist the physicians and to keep the practice of medicine at a high level It was stated that the Bureau of Legal Medicine has given the state medical societies full instructions as to the procedure to obtain social security-tax exemption if this is possible. It is very necessary that state and county medical societies should ask for the exemption of tax liability under the Income Tax Act and also under the Social Security Act. The Board of Trustees reported evidence to disprove the claim that some organizational arrangement can lower the cost of good medical services. It has been found that the average cost of this service is twenty-five to thirty dollars per person annually

The continued study of air conditioning was advised and it was recommended that an investigation be made of the possibility of artificial climates causing injury It was voted that the primary responsibility in the care of the sick and injured in disaster rests with the local physicians and dentists. The function of the American Red Cross should be that of co-operation and assistance to the local groups. The trustees stated that the Committee on Medical Care has been appointed and is functioning A resolution was passed to the effect that it is highly desirable that full citizenship in the United States be demanded of graduates of foreign medical schools before they be licensed to practice medicine in this country

It was recommended that local and county societies study the improvement of medical services in rural areas and especially investigate the complaints that charges made in the rural communities are still based on mileage and are too high. A study of fee schedules is to be made by the Bureau of Medical Economics. The rental of radium has been studied and it was voted that the prescribing and directing of its use in the case of a patient whom the prescriber has not examined or seen is an unethical medical procedure. It was recommended that constituent state societies consult with the Judicial Council when changes to the constitution are deemed necessary This is an attempt to prevent conflict between the constitutions and by laws of the state societies and the American Medical Association.

It was requested that the action of the House of Delegates declaring the association of doctors of medicine with cultists to be unethical and reprehensible be brought

to the attention of the general assemblies of the state societies Consultations or associations in practice were declared to be bad, but teaching in cultist schools and addressing cultist societies is worse. The House of Delegates expressed its complete confidence and respect for the editor of the *Journal of the American Medical Association* The committee in charge of the survey of medical care being conducted by the association urged the co-operation of every member and county and state society so that the findings may be complete.

It was recommended that each unit of the American Medical Association be urged to undertake immediately the education of the public on the need and value of competent animal experimentation. It was also recommended that studies be initiated for the determination of definite tests for alcohol intoxication Visual standards for operating motor vehicles were approved. It was stated that state medical associations should endeavor to procure medical memberships on compensation commissions and industrial boards The practice of medicine by hospitals was disapproved, and the inclusion of special medical services such as anesthesia, radiology or pathology in group hospitalization insurance policies was approved only if specified cash payments for the cost of these services be paid directly to the subscribers

An address prepared by Miss Josephine Roche, chairman of the Interdepartmental Committee to Co-ordinate Health and Welfare Activities of the Federal Government, was read by Dr Draper She stated that technical committees had been appointed, were making surveys and would report at a national health conference on July 18–20, 1938, to which some of the doctors and officers of the American Medical Association had been invited At this conference a national health program was presented by the committee, of which Miss Roche was chairman Its Technical Committee on Medical Care found

1 Preventive health services are grossly insufficient.

2. Hospitals are inadequate and their financial support insufficient in many communities, particularly rural areas, and especially for the indigent and near indigent.

3 One third of the population of this country is receiving inadequate or no medical service.

4 An even larger fraction of the population suffers from economic burdens created by illness

The committee's recommendations were given, but no general discussion of its program was allowed The recommendations have been summarized as follows

1 Expansion of the public-health service, with increased personnel, control of tuberculosis, venereal diseases, pneumonia, cancer and malaria and programs of mental hygiene, industrial hygiene and maternal and child welfare.

2. Increase of hospital facilities by constructing and maintaining hospitals containing 360,000 beds, and also 500 health and diagnostic centers

3 Medical care of the medically indigent by federal grants-in-aid to the states, this program to be developed around and based on the existing public-health service.

4 General program for medical care either by the expansion of public medical services so that the system of medical care would be similar to that of public education or by compulsory health insurance similar to the present old age security

5 Insurance against loss of wages during sickness to be developed alongside the present unemployment insurance.

A special session of the House of Delegates was held at Chicago, September 16–17, 1938, to discuss this proposed health program Numerous plans to provide for adequate medical care were offered by various medical societies and individuals Representatives of the National Medical Association, mouthpiece for 5000 colored physicians, addressed the delegates and pledged the co-operation of their association It was announced that the Department of Justice of the United States Government proposed to seek an indictment of the American Medical Association as a monopoly It was voted that in the event of an indictment the House of Delegates give full support to the Board of Trustees in defending such litigation to the utmost, in order to establish the right of organized medicine to oppose types of contract practice damaging to the health of the public.

After a full and lengthy discussion of the proposed health program the House of Delegates unanimously approved the following

1 The establishment of a federal department of health with a doctor of medicine as its secretary and a member of the Cabinet, the general principles for the expansion of public health and maternal and child health services, but this should not include the treatment of disease that could be done by private practitioners

2 The expansion of hospital facilities where necessary, stressing the use of existing facilities It suggested that hospitals be paid the costs of hospitalization of the medically indigent.

3 The complete medical care of the indigent, organized by local governmental units and supported by tax f provided that the administration be simplifi nd co-ordinated and that it be arranged by local ublic officials in co-operation with the local medical profession.

4 Hospital service insurance not including any type of medical care, voluntary cash indemnity insurance to cover the cost of emergency or prolonged illness, and industrial illness insurance. Compulsory health insurance was opposed.

5 Insurance against loss of wages due to illness It was suggested that the attending physician be not asked to certify as to illness or recovery

During the year your delegate has attended six county medical society meetings and has told the members about the National Health Program and the recommendations of the American Medical Association In the summer the threatened indictment of the association and its officials under the Sherman antitrust law became a fact. In February, Senator Wagner, of New York, introduced in Congress a bill which, if enacted, would be known as the National Health Act of 1939 The meeting of the House of Delegates at St. Louis, May 15–19, 1939, was chiefly concerned with a discussion of this bill The proposal to have a permanent woman delegate was turned down as women may now be elected delegates to the association Chemical tests were endorsed as criteria for alcoholic intoxication The question of colored physicians' being members of the American Medical Association was discussed It was brought out that they are eligible to mem

ership in the association that many of them are members at the present time but that every county medical society has the right of self government in local matters, including membership It was voted that there should be no discrimination by the government agencies against any competent and qualified physician because of race, color creed or sex which interferes with his right as a physician to serve those who desire to consult him

The Farm Security Administration plans for medical care were discussed. It was brought out that these plans were in operation in twenty three states at a cost of $15–$30 per family annually It was voted that there should be a better understanding between the county and state medical societies and the Farm Security Administration. It was recommended that all county agreements be made under master agreements with the state societies.

A reference committee was appointed to consider the Wagner Health Bill which is intended to make effective the national health program outlined in this report. It is "A Bill to provide for the general welfare by enabling the several states to make more adequate provision for public health prevention and control of disease, maternal and child health agencies, construction and maintenance of needed hospitals and health centers, care of the sick, disability insurance, and training of personnel to amend the Social Security Act and for other purposes." Long hearings were held at which it was brought out that some of its proposals were good but that others were bad and that the bill should either be opposed as a whole or be amended drastically

The committee's report was adopted without a dissenting vote and it is recommended that all members of the society read it, as it will give them an understanding of the Wagner Health Bill and the position of the American Medical Association relative to it. The committee summarized the report as follows

1 The Wagner Health Bill does not recognize either the spirit or the text of the resolutions adopted by the House of Delegates of the American Medical Association in September 1938.

2. The House of Delegates cannot approve the methods by which the objectives of the National Health Program are to be obtained.

3. The Wagner Health Bill does not safeguard in any way the continued existence of the private practitioners who have always brought to the people the benefits of scientific research and treatment.

4. The Wagner Health Bill does not provide for the use of the thousands of vacant beds now available in hundreds of church and community general hospitals.

5 This bill proposes to make federal aid for medical care the rule rather than the exception.

6. The Wagner Health Bill does not recognize the need for suitable food, sanitary housing and the improvement of other environmental conditions necessary to the continuous prevention of disease.

7 The Wagner Health Bill insidiously promotes the development of a complete system of tax supported governmental medical care.

8 While the Wagner Health Bill provides compensation for loss of wages during illness, it also proposes to provide complete medical service in addition to such compensation.

9 The Wagner Health Bill provides for supreme federal control federal agents are given authority to disapprove plans proposed by the individual states.

10 The Wagner Health Bill prescribes no method for determining the nature and extent of the needs for preventive and other medical services for which it proposes allotments of funds.

11 The Wagner Health Bill is inconsistent with the fundamental principles of medical care established by scientific medical experience and is therefore contrary to the best interests of the American people.

12. The fortunate health conditions which prevail in the United States cannot be disassociated from the prevailing standards and methods of medical practice.

13 No other profession and no other group have done more for the improvement of public health, the prevention of disease and the care of the sick than have the medical profession and the American Medical Association

14 The American Medical Association would fail in its public trust if it neglected to express itself unmistakably and emphatically regarding any threat to the national health and well-being It must, therefore, speaking with professional competence oppose the Wagner Health Bill.

15 The House of Delegates would urge the development of a mechanism for meeting the needs for expansion of preventive medical services extension of medical care for the indigent and the medically indigent, with local determination of needs and local control of administration, within the philosophy of the American form of government and without damage to the quality of medical service.

16. The fundamental question is how and when a state should be given financial aid by the federal government out of the resources of the states as a whole, pooled in the federal treasury

17 The bizarre thinking which evolved the system of federal subsidies—sometimes called "grants-in-aid"—is used to induce states to carry on activities suggested frequently in the first instance by officers and employees of the federal government.

18 The use of federal subsidies to accomplish such federally determined activities has invariably involved federal control.

19 Any state in actual need for the prevention of disease, the promotion of health and the care of the sick should be able to obtain such aid in a medical emergency without stimulating every other state to seek and to accept similar aid and thus to have imposed on it the burden of federal control.

20 The mechanism by which this end is to be accomplished whether through a federal agency to which any state in need of federal financial assistance can apply or through a new agency created for this purpose or through responsible officers of existing federal agencies, must be developed by the Executive and the Congress who are charged with these duties.

21 Such a method would afford to every state an agency to which it might apply for federal assistance without involving every other state in the Union or the entire government in the transaction.

22. Such a method would not disturb permanently the American concept of democratic government.

The 1940 session of the American Medical Association will be in New York next June. This is probably as near

to New Hampshire as these great events will ever be held, and all our members should make an effort to attend

DEERING G SMITH

SPEAKER DYE Gentlemen, you have heard the report of your delegate to the American Medical Association Are there any questions?

DR SMITH I want to say a word about the Farm Security Administration All the medical surveys have said $25 00 to $30 00 per person was necessary annually for complete medical service Yet, under the Farm Security Administration plan, the amount varies from $15 00 to $30 00 annually per family, in some cases that does not cover complete medical service, and it does not cover hospitalization

DR DUNBAR The Committee on Officers' Reports recommends that the Secretary apply for the exemption of the Society from tax liability under the Income Tax and Social Security acts He should also give instructions to the secretaries of the county societies, in order that they may make similar applications

The recommendations relative to changes in the constitution of the Society should be brought to the attention of the Committee on Amendments to the Constitution and By-Laws

Our society should be on its guard against the encroachments of the hospitals in the field of medical practice

We approve of the principles relative to the extension of medical care that were adopted by the House of Delegates of the American Medical Association

We also agree with that body in its opposition to the Wagner Health Bill

We recommend that the Secretary, next spring, call the attention of the members to the session of the American Medical Association, to be held in June, 1940, at New York City

I move the adoption of this portion of our report

This motion was seconded and was carried

Report of Committee on Amendments to Constitution and By-Laws

Your committee has received no suggestions for changes in our laws during the year, and no changes appear at this time to require the attention of the committee. The carefully prepared amendments, which have been the work of Dr Henry O Smith, former chairman, have left a structure that for the present, at least, appears to meet our needs

Propositions for amendments, originating in the House of Delegates, will receive the prompt and careful consideration of your committee.

FRED E. CLOW,
LOUIS W FLANDERS,
EMERY M FITCH

DR DUNBAR We have no further recommendations to add to this report, except the recommendation which we made in the previous report

Report of the Committee on Control of Cancer

It is evident that the physicians of New Hampshire are becoming more and more cancer conscious Charity patients and private patients alike are having earlier diagnoses of cancer due to a more alert attitude on the part of the family physician As a corollary of this improvement, the Pathological Laboratory at Hanover reports that an increased number of biopsy specimens are being sent in

There is still plenty of evidence that many physicians are not alert to the serious possibilities of such symptoms as flowing between periods and after the menopause, and bleeding from the rectum and bladder No form of treatment in such cases should be instituted until definite diagnosis is made

Curability of cancer depends on early recognition, and this, in turn, demands as a prerequisite the seeking of advice by the patient. Education of the public regarding methods of cancer control is as important a duty of the physician as the other two factors in cancer control early diagnosis and early treatment

This year, as in the past, your committee has prepared and mailed three letters on pertinent cancer subjects to every member of the profession in New Hampshire. The first one (March, 1939) was on the diagnosis and treatment of metastasis in the cervical lymph nodes The second (April, 1939) covered methods of examination of breast cancer, and the third letter (May, 1939) gave information pertaining to the diagnosis and treatment of malignant melanoma

Your committee continues to co-operate with the New Hampshire Cancer Commission with its clinics and with the Women's Field Army of the American Society for the Control of Cancer

Due to the utilization of pre-canceled stamped envelopes, your committee has expended only $42.07 of the $60 appropriated We ask this year for an appropriation of $50

GEORGE C WILKINS,
HOWARD N KINGSFORD,
GEORGE F DWINELL

DR DUNBAR The Committee on Officers' Reports congratulates the Committee on the Control of Cancer on the evidence presented that its labors are bearing fruit

We recommend the appropriation of $50 00 for the work of this committee

I move the adoption of this portion of the report.

This motion was seconded and was carried

Report of the Committee on Medical Education and Hospitals

The most interesting development of this year has been the evolution of the program of the Associated State Committees on Postgraduate Medical Education The third annual meeting was held under the auspices of the American Medical Association during the meeting in St Louis in May At this meeting our committee was represented by Dr Deering G Smith, the delegate from the New Hampshire Medical Society It is probable that

through this association of committees, federal participation in the program of postgraduate education will be worked out.

The Commonwealth Fund fellowships have been sufficiently publicized in the last few years so that their purpose and operation are well known. The announcements for this year were sent out by this committee in January. Up to the present, only fourteen requests for application blanks have been received. These are filled out by the applicant himself and mailed to the office of the Commonwealth Fund in New York City. It is rather discouraging that this number shows a gradual decrease in the past three years. Suggestions by us, to the effect that the eligibility requirements for the fellowships be widened in order that a greater number of men be eligible, have not as yet met with any results.

At this date it has not yet been made known by the office of the Commonwealth Fund what men have been appointed to these fellowships for this year. It is interesting to note that most of the applicants are men who have been recipients of these fellowships in the past.

At the time of the circularizing of the members of the society in January in connection with the Commonwealth Fund fellowships, requests were included for registration of individuals for the Speaker's Bureau. Fifteen registrations were submitted, and this list has been placed in the hands of the secretary of each county society.

JOHN P. BOWLER,
JAMES W. JAMESON
HARRIS E. POWERS

DR. DUNBAR: Your Committee on Officers Reports recommends that the Committee on Medical Education and Hospitals continue its efforts to widen the eligibility of requirements for the Commonwealth Fund fellowships.

I move the adoption of this portion of our report.

This motion was seconded and was carried.

Report of the Committee on Mental and Social Hygiene

Further progress in the advancement of the program for the eradication of syphilis in the State has been made during the past year. The premarital examination law has been put into effect, and a number of new cases of syphilis have been discovered. The law however if not interpreted in each individual case according to its merits may bring hardships on adequately treated cases with persistently positive blood reactions where both parties to the marriage contract are well aware of the presence of the infection and are willing to undergo further treatment.

A routine blood examination for syphilis on all patients admitted to all general hospitals in the State is recommended.

The value of fever treatment in neurosyphilis and also in other types of syphillis has been established beyond doubt. The State Hospital in Concord and the Elliot Hospital in Manchester have full facilities for carrying out such treatment under carefully supervised conditions.

During the last year about a dozen patients with active neurosyphilis have been referred to the Manchester Mental Hygiene Clinic from the Venereal Clinic in Manchester. Some of those with mental symptoms have been referred to the State Hospital as voluntary patients of the others some refused to enter the State Hospital because they did not feel they were insane. At the same time, they are willing to receive fever treatment in a general hospital if their hospital bills are paid.

It would, therefore, be advisable for the Board of Health to set aside a certain sum annually to defray the cost of hospitalization for fever treatment, and also for more accurate spinal fluid studies in such patients.

The State Planning Board has just completed a painstaking analysis of the needs of the State Hospital. It recommends a program of expansion for a number of years.

The need for more adequate outpatient services in psychiatry throughout the State has become more evident. It is hoped that the Department of Probation will see fit to acquire the services of a full-time psychiatrist to take care of the problems in the juvenile courts, the Industrial School and the State Prison.

During the year a number of persons accused of committing capital crimes have been sent to the State Hospital for observation as to the presence of insanity. This procedure is much more satisfactory than the one followed in other states where the patient is examined by the psychiatrist once or twice in jail.

Much demand has been made upon the time of the staff of the Laconia State School and the State Hospital for lectures before interested groups who are thirsty for information on social and mental hygiene.

In 1937 the House of Delegates passed a resolution recommending that a study be made of the matter of simplification of the sterilization procedure. The sterilization law in New Hampshire is a very good one, and was intended to make sterilization not too easy. For this reason the hereditary factor was made the basic essential. However we do recommend that provisions be made in the law for sterilization of some who are not necessarily institutionabred. Also it would be helpful, for social reasons, if defective mothers already with several children who may not show a similar defect, could be sterilized and permitted to be at home again.

A very comprehensive paper entitled "Sexual Sterilization in New Hampshire," by Dr. Simon Stone, was published in the September 17, 1936 issue of the *New England Journal of Medicine*.

CHARLES H. DOLLOFF
BENJAMIN W. BAKER.

DR. DUNBAR: The Committee on Officers Reports recommends that the House of Delegates approve of routine blood examinations for syphilis on all patients admitted to general hospitals, and that the Secretary be instructed to notify the hospitals of his state as to the suggestion.

We approve of the change in the sterilization law and suggest that this matter be referred to the Committee on Public Relations.

We approve of the suggestions regarding fever treatment of neurosyphilis and the study of spinal fluids, and advise referring the matter to the State Board of Health for study and appropriate action.

I move the adoption of this portion of the report.

This motion was seconded and was carried.

Report of the Committee on Child Health

In addition to scheduled meetings, the members of your committee have been in frequent contact for the informal exchange of ideas We have endeavored to keep in touch with what is being done in other states

A great deal of attention is currently being given to such subjects as the prevention of contact infections, particularly tuberculosis, by examination of teachers, nursemaids and others coming in contact with children Also under consideration are the health standards in summer camps, and improvement in the effectiveness of school examinations

A few of the New Hampshire doctors interested in child health have organized during the past year as the New Hampshire Pediatric Society

In co-operation with the Division of Maternal and Child Health of the State Board of Health, your committee sent a letter to all members of the Society requesting a list of all crippled children known to them

Your committee feels that limiting state aid to certain groups of physically handicapped, needy children while withholding it from others is not logical The most conspicuous omission is probably the group handicapped by cardiac disease

In regard to lectures on pediatric subjects before county medical societies, which last year the society approved, your committee believes that the State Board of Health is both willing and able to co-operate.

We had hoped to be able to send to each member of the Society a brief summary of immunization procedures, prepared by the American Academy of Pediatrics This booklet is out of print, but a revision is expected soon When it does become available, we feel it should be distributed

We have worked in close co-operation with the director of Maternal and Child Health of the State Board of Health We have been able to advise on methods of vaccination, on the best preparations and technic of immunizing against diphtheria, on the use of the Schick test, and so forth

At present we are considering standard procedures for the well-child conferences conducted by the Board of Health The subject of more widespread tuberculin testing has been brought to the fore recently One factor in this is that recently there has become available a patch test, which requires no injecting One member of the committee tried the method this last year, and discovered one active case of tuberculosis

We feel that it is important for the Committee on Child Health to be continued New hazards to child health are constantly appearing, as for example, equine encephalitis, which has a high fatality rate when transmitted to children, but which can be prevented from spreading by the vaccination of all horses

COLIN C STEWART,
FRANKLIN N ROGERS,
TRAVIS P BURROUGHS

DR DUNBAR We approve of the activities of the Committee on Child Health and recommend that this committee be continued

We recommend that the $50 00 we appropriated a year ago be left with the committee to use in distributing the summary of immunization procedures or other literature that the committee might deem of interest

We recommend that the committee continue its efforts to broaden the definition of crippled children, so as to include all needing assistance.

I move the adoption of that part of our report.

This motion was seconded and was carried

Report of the Committee on Maternity and Infancy

The committee has functioned during the past year in the same capacity as in former years It has carried on an exhaustive study of maternal deaths, and gathered data on infant deaths and stillbirths This was done in co-operation with the Division of Maternal and Child Health of the State Board of Health.

Five meetings were held during the year At each meeting a study was made of all the information on each maternal death The material used consisted of a copy of the death certificate, answers to questionnaires sent to physicians reporting the maternal death, and in most cases information obtained by a personal interview with the physician in charge of the case. Wherever possible the hospital records were checked and studied In all cases, the patient was known to the committee only by number All information obtained was confidential

The maternal mortality, in figures per 1000 live births, in New Hampshire for the last few years is as follows

YEAR	RATE
1930	6 2
1932	5 4
1933	6 3
1934	5 4
1935	6 1
1936	4 8
1937	4 3

Statistics for 1938 are not yet available, the estimated rate is 3 4 In 1937 there were 34 maternal deaths In 1938 there were 24 maternal deaths reported up to January 1, 1939

The maternal death rate in New Hampshire for the first five years noted, varied very little, but in the last two years (1936–1937) there was a noticeable drop

Infant mortality, in rates per 1000 live births, is as follows

YEAR	RATE
1930	61
1932	58
1933	55
1934	60
1935	54
1936	47
1937	48

The infant mortality shows the same downward trend in the last two years

In comparison with the rest of the United States, New Hampshire is still in the upper ten states for low infant mortality, and in the upper twenty five for low maternal mortality, falling in about twentieth place.

An analysis shows that the chief causes of maternal death in the series for 1938 were (1) cesarean sections and complications, (2) toxemias of pregnancy, (3) accidents of labor, (4) other miscellaneous causes An interesting point is that puerperal sepsis as a cause is not predominant as was the case last year In analyzing the 6 cesarean sections, it was found that only 2 were performed with any definite indication.

There was a predominance of hospital deliveries in this

series. Of the 24 maternal deaths recorded for 1938 there were 21 delivered in hospitals. One striking finding was the fact that most of the hospital records were very incomplete. The accounts of the delivery itself were found to be very sketchy. Physicians records of the prenatal care were vague. Most records are kept on small cards, but many physicians keep no records at all.

It was noted that out of the 24 cases only 2 complete autopsies were performed and 1 partial postmortem examination.

In studying the maternal deaths for this year as before, the committee has attempted to divide them into three categories:

1. Those in which the patient was at fault (1 case)
2. Those in which the obstetrical treatment was apparently inadequate (4 cases)
3. Those of unavoidable deaths (10 cases)

Of the balance, 4 cases were not deemed obstetrical deaths and 5 cases are still unclassified.

A study of stillbirths, which was made entirely from death certificates and answers to a questionnaire showed that there were 242 stillbirths reported. Questionnaires were sent to 242 physicians and answers were received from all but 35. The leading causes of death in order were prematurity, toxemia of pregnancy, instrumental delivery, deformity, hemorrhage — premature separation of the placenta.

There seems to be some confusion as to the definition of a stillbirth, since many of the reports for 1938 were for births in the nonviable period.

RECOMMENDATIONS

Obstetric cases should be cared for in separate departments and delivered in rooms used only for that purpose, with special rooms for isolation of all infected cases. Caps, masks, and sterile gloves and gowns should be worn at all deliveries in the case of hospitals, special apparatus for resuscitation and meeting hemorrhages should be available. High forceps should be eliminated entirely and forceps should be eliminated so far as possible and forceps should be used on cases only when the head is on the perineum. Vaginal examinations during labor should be replaced by rectal examinations.

Cesarean sections should be elective only and consultation should be held on all cases before operating. In addition it is recommended that the consultant be a physician qualified to practice and specialize in obstetrics. It is further recognized that the treatment of obstetrical cases is a definite specialty.

Samples of blood for Wassermann tests should be taken on all prospective mothers as soon as they come under treatment.

In the analysis of the 4 cases of toxemia it was found this year that there is much confusion as to the meaning of the Stroganoff treatment versus a modified type of such treatment. In all but 2 cases the treatment described for toxemia was not only vague but grossly inadequate. The main principles of the treatment consist in sedation, dehydration and, when necessary, cardiac stimulation. As a routine simple treatment, the following is recommended:

Absolute quiet.
Sedation — a barbiturate.
Concentrated magnesium sulfate and glucose intravenously. The dose should be regulated according to the needs of the individual case.
Rapid digitalization in all cases with convulsions or threatened with convulsions. For the average patient, a total dose of 20 to 25 gr. should be given.

This treatment is a combination of the Stroganoff treatment (sedation) and the Dublin treatment (elimination and dehydration).

The committee feels that there is no condition in obstetrics where an accouchement forcé is justified.

The committee recommends the following minimum standards for delivery room technic:

1. That all personnel coming in contact with the patient in the delivery room or following delivery be carefully masked at all times.
2. That admission throat cultures be taken on all patients at the time of admission in order that the occasional streptococcus carrier may immediately be isolated.
3. That all nurses and floor maids be cultured at least every week when in the maternity ward.
4. That only such nurses be used for relief on the maternity ward as have previously had negative throat cultures.
5. That enemas be used at the time of admission only in such cases as it may seem necessary and not as a routine.
6. That rectal examinations be used by the doctors in preference to vaginals.
7. That the nurses pay the strictest attention to keeping the patients bladders empty.
8. That it be strictly forbidden for nurses to leave the room for any reason after the patient has been given barbiturates.
9. That dry preps of the vulva and perineum be used in preference to wet preps, either by painting or spraying.
10. That draping of the patient be done with a large sheet plus a V-sheet rather than with towels.
11. That nurses and doctors in the delivery room wear sterile gowns, masks and gloves, and that the gloves be dry sterilized rather than boiled.
12. That the strictest care be observed that nurses shall report the earliest sign of any respiratory infection in themselves and that no nurse shall return to duty on the maternity ward following an illness until she has had a negative throat culture.

The committee deplores the practice of nurses caring for surgical cases being in attendance to obstetric cases unless a period of time has elapsed between cases allowing for negative throat cultures and for complete bathing and scrubbing.

It is recommended that infected or ill cases at delivery be isolated from the other obstetric patients and that in the event of delivery, such be accomplished in an isolated delivery room.

It is recommended that isolation facilities be available in the nursery where ill or infected babies may be cared for separately from the well infants.

The committee deplores the hiring of lay persons to attend obstetric patients in the home.

The committee deplores the attitude of some physicians who object to public-health nurses doing prenatal work.

The purpose of these studies is entirely educational and is aimed at aiding the individual physician in his problems as well as the many mothers who needlessly die each year in childbirth.

Benjamin P. Burpee,
Chester F. McGill,
Robert O. Blood

DR DUNBAR The Committee on Officers' Reports recommends the suggestions of the Committee on Maternity and Infancy We further recommend that members of the Society work for the adoption of its proposals in local hospitals

I recommend the adoption of this part of our report

This motion was seconded and was carried

Report of the Committee on Tuberculosis

The phenomenal progress which has been made during the past thirty five years in the control of tuberculosis presents a challenge for its ultimate eradication Still the leading cause of death in the most productive years of the lives of the people of New Hampshire, its speedy eradication is of paramount importance

That the medical profession of the Nation is determined to wage an increasingly effective campaign against tuberculosis is seen in the setting up of committees on tuberculosis by most of the state and many of the county medical societies

In this connection it is of some gratification to know that the Committee on Tuberculosis of the New Hampshire Medical Society is perhaps the oldest, and is assuredly one of the oldest, among the state medical societies, having been authorized in the year 1914

It is now possible to admit patients to our sanatoriums within a reasonably short period of time after application However, a nurses home is desperately needed at the New Hampshire State Sanatorium Also funds are sorely needed for chest surgery, particularly thoracoplasty operations

During the year, members of the society throughout the State have increasingly availed themselves of the services of the New Hampshire State Sanatorium and the New Hampshire Tuberculosis Association in the interpretation of chest x ray films

We continue to urge that the members of the society avail themselves of the invaluable assistance of the chest x ray We urge an x ray of the chest in any case of otherwise unexplained loss of weight and fatigue, even if cough, expectoration, hemorrhage or fever is not present. We also continue to urge more and more sputum examinations and particularly series of sputum examinations in all cases of patients who are raising sputum

We urge on members of the society that they arrange for the tuberculin testing of all members of the family who have been in contact with an 'open case of tuberculosis We urge that all 'positive reactors" have the additional advantage of an x-ray of the chest to determine the extent of possible injury to the lungs

In addition to its state wide search for tuberculosis, through its regular diagnostic clinic service, the New Hampshire Tuberculosis Association has maintained a supplementary case finding service through the tuberculin testing of thousands of children in the high schools of the State Also, through search in the homes of the positive reactors, it is possible to find the spreaders of the tuberculosis germ For the most part, Purified Protein Derivative (P P D, first strength) tuberculin injected intracutaneously (Mantoux test) is the method of procedure in this program However, the association is using the patch test of Vollmer, prepared by Lederle and Company, in the tuberculin testing of contacts coming into the regular diagnostic clinics

In this connection a study of the comparative effectiveness of the P P.D and patch tests was made by the association in the spring of 1938 in eleven high school groups A total of 1455 pupils were tested The site for the Mantoux test was cleansed with alcohol, and for the patch test with acetone, P P D (first strength, 0 1 cc.) was injected in the right forearm, and the patch test was applied carefully on the left. Most of the reactions obtained by the patch tests were sharply defined Some showed slight blistering in the more pronounced reactions It was noteworthy that in a few cases the patch test did not become positive until five to seven days after the removal of the patch In practically all cases the patch test results ran parallel with those of the intracutaneous test In the 1455 children, 212, or 14 5 per cent, gave positive reactions by the two tests

ROBERT B KERR,
ROBERT M DEMING,
JOHN D SPRING

DR DUNBAR The Committee on Officers' Reports recommends that all members of the Society bear in mind the results that may be obtained if all assist in carrying on the good work being done by those who are especially interested in tuberculosis

I move the adoption of this part of our report

This motion was seconded and was carried

Report of Necrologist

1938

NAME	PLACE OF DEATH	DATE
Melvin P Badger	Manchester	April 23
John W Bowler	Hanover	December 27
Charles B Drake	West Lebanon	April 2
William Hale	Kingston, Rhode Island	March 30
George E Leete	Concord	February 22
William H Nute	Exeter	August 18
Frank A Smith	Lebanon	April 24
Joseph Theriault	Montreal, Canada	May 9
Russell Wilkins	Manchester	July 22

1939

Ralph H Barker	Derry	March 21
Roscoe G Blanchard	Dover	January 12
Alpha H Harriman	Laconia	May 30
Alfred A Macleay	Manchester	June 1
Guy D Tibbetts	Antrim	June 2
Charles A Weaver	Manchester	March 6

HENRY H AMSDEN

DR DUNBAR I move the acceptance of the report of the Necrologist

This motion was seconded and was carried

DR EDNA WALCK I present for affiliate membership two names from Strafford County Joseph H Richard and Louis L Gilman

DR GEORGE C WILKINS I move that Dr Rich

ard and Dr Gilman be made affiliate members of the Society

This motion was seconded and was carried

SPEAKER DYE *Is there any other business?*

DR. COBURN I have a letter from the Bureau of Legal Medicine of the American Medical Association concerning the Wagner Bill I believe we should draw up a resolution about it

SECRETARY METCALF There are many groups in the State that would be glad to have a talk or a debate on such a subject If we had a few men who would make a definite study of the Wagner Bill they could probably spread a good deal of information about it

DR. SMITH I move that the Secretary be requested to write a letter to the secretaries of the various county societies, following out this suggestion

This motion was seconded and was carried

SPEAKER DYE Are there any more candidates for affiliate membership?

DR. DUBE I propose the name of John Z. Shedd, of North Conway, for affiliate membership

This motion was seconded and was carried

SPEAKER DYE Is there any further new business?

DR. DUBE In 1941, the New Hampshire Medical Society will be one hundred and fifty years old It has been suggested that the President appoint a committee to formulate plans for the observance of this anniversary I make that a motion

This motion was seconded and was carried

SPEAKER DYE Is there any further business to come before this meeting? If not, a motion to adjourn is in order

DR. E M FITCH I move that we adjourn until 8.30 tomorrow morning

This motion was seconded and was carried

Whereupon the first meeting of the House of Delegates was adjourned at 10-45

CASE RECORDS OF THE MASSACHUSETTS GENERAL HOSPITAL

ANTEMORTEM AND POSTMORTEM RECORDS AS USED IN WEEKLY CLINICOPATHOLOGICAL EXERCISES

FOUNDED BY RICHARD C. CABOT, M.D

TRACY B MALLORY, M D, *Editor*

CASE 25311

PRESENTATION OF CASE

First Admission An eleven-year-old boy was admitted complaining of severe headache, vomiting and occasional hematemesis

Two years before entry the patient's head was struck against a board as a result of which he was dazed but not unconscious He remained in bed during the afternoon but was much better the next day From this time on he complained quite often of being tired His parents noticed that he occasionally suffered from "dazed spells" For the last year and a half he had staggered and seemed unable to walk straight He complained of shortness of breath and of severe headaches in the morning which grew milder toward evening There was frequent vomiting, which gradually increased until at entry he vomited practically everything ingested All his symptoms had increased during the last month Puffiness of the eyes developed, but there was no swelling of the legs He complained of pains in the legs and over the heart and also of blurred vision

The patient was one of twins, the other twin was stillborn His birth was otherwise normal The mother had later had one miscarriage He developed normally during infancy At the age of five years he had had whooping cough, at six years chickenpox and at seven years measles His past history and family history were otherwise noncontributory

Physical examination showed a well-developed and nourished boy in no distress There was a definite left internal strabismus The pupils were dilated but reacted to light and distance. There was definite choking of both disks, slightly more on the left The teeth were carious, the tonsils and pharyngeal mucous membranes moderately injected The lungs were clear, the heart normal Examination of the abdomen was negative Neurological examination showed slight facial weakness on the right There was a tendency to past point to the right The Romberg was negative He walked unsteadily, waveringly and not in a straight line There were slight tremor and weakness of the extremities and of the tongue. Movements in bed were unco-ordinated and uncertain There was a positive Kernig, but no clonus and no Babinski The knee jerk was active on the left at first but could not be elicited again The right knee jerk was absent, and no ankle jerks were obtained

The temperature was 99°F, the pulse 60, and the respirations 20

Examination of the urine was negative The blood showed a red-cell count of 6,160,000 with 100 per cent hemoglobin, and a white-cell count of 5300 with 74 per cent polymorphonuclears A blood Wassermann test was negative A Schick test was negative A 1 1000 tuberculin test was negative

X-ray films showed unusually prominent convolutional markings throughout the skull The changes were more marked in the frontal region. The suture lines were wide There were no areas of increased density in the brain The sella turcica was not definitely abnormal, although it was rather deep and its outline a little hazy

On the seventh hospital day a combined ventricular and lumbar puncture was done The initial ventricular pressure was 600 mm of water, which was brought down to 200 mm before the lumbar region was tapped There was evidence throughout the operation of a slight degree of dynamic block, there being a difference of from 30 to 40 mm of pressure in the two regions on all readings On jugular compression there was a prompt rise in the ventricles from 250 to 350 mm and in the lumbar region from 220 to 260 mm There was a somewhat more rapid fall in the ventricle than in the lumbar region on release of pressure Withdrawal of fluid from either locus caused an equal drop in pressure in each manometer The final pressure in the two loci was about 200 mm The spinal fluid from the lumbar tap contained 580 red cells and 7 white cells per cubic millimeter, it showed a total protein of 48 mg per 100 cc, sugar 73 mg, and chlorides 734 mg The gold-sol test was 0135511100 The ventricular fluid showed 97 red cells and no white cells per cubic millimeter, a total protein of 8 mg per 100 cc., sugar of 88 mg, and chlorides of 741 mg The gold-sol test was 0000000000

The patient did very well following the combined puncture On the tenth hospital day a cerebellar exploration was done The vermis was found to fuse with the left cerebellar hemisphere Tapping of both cerebellar hemispheres yielded nothing There was no evidence of a fourth ventricle tumor No tumor could be seen anywhere but there was a definite abnormality in the size and relation of the vermis to the left cerebellar hemisphere, a finding which was believed to be indicative of a deep left cerebellar tumor It was considered unwise to explore further The patient

mproved slightly after the operation On the wenty seventh hospital day x-ray therapy was egun. He was discharged to the Out Patient Department

Second Admission (fourteen years later) The atient had been quite well until one year before is second admission, at which time he began to ave severe throbbing headaches in the occipital egion These usually came on early in the morn ag, often awakening him, disappeared in the fternoon and were relieved by lying down Soon fter onset they disappeared and were absent for wo months About six months before entry he egan to have momentary bouts of unsteadiness hile walking, appearing as often as ten times a lay He staggered and occasionally collided with bjects at his side. He did not know whether he taggered more to one side than the other These ymptoms gradually increased until entry For everal months he was troubled with diplopia Occipital headaches began to occur again about ix weeks before admission These seemed to be worse on the right. There had been no nausea r vomiting and no disturbances of vision other than diplopia There was no clumsiness of hand movements except that those on the left were markedly slower than those on the right He had noticed no definite ringing in the ears He had slept, exercised and eaten regularly There had been no accidents or injuries since he had been discharged fourteen years previously

Physical examination showed a well-developed and nourished young man in no distress The general physical examination was negative The blood pressure was 110 systolic, 75 diastolic. Neurological examination showed that the patient was calm, fairly intelligent and co-operative There was slight ataxia with veering to the left on walking There was a slight but obvious inaccuracy in approximating the left finger to the nose, with moderate wavering of the finger Skilled movements of the left fingers were slow and inaccurate. There was past pointing and adiadokokinesis of the left side. Examination of the fundi showed slight blurring of the disk margins and marked tortuosity of the vessels with moderate dilatation of the veins There was slight weakness of the right lateral rectus muscle. Diplopia was present with the eyes at rest, was increased on looking to the right, and was unchanged on looking to the left. Nystagmus was evident on looking to the left. The vision was 20/20 on both sides Visual fields showed slight enlargement of both blind spots, more marked on the right The deep reflexes were present and equal on both sides Muscular strength was good No other neurological abnormalities were noted

The temperature was 99°F., the pulse 80, and the respirations 20

Examination of the urine was negative. The blood showed a red-cell count of 4,760 000 with 85 per cent hemoglobin, and a white-cell count of 5300 with 75 per cent polymorphonuclears Two blood Hinton tests were negative. A spinal fluid Wassermann was weakly positive A lumbar puncture showed an initial pressure of 270 mm., which fell to 190 mm after removal of 10 cc. of fluid The fluid was clear and colorless There were no cells. The total protein was 138 mg per 100 cc., the sugar 73 mg The gold-sol test was 1231000000 A stool examination was guaiac negative.

X-ray films of the skull showed a large bone defect in the occipital area, with clips in place There were multiple areas of calcification scattered throughout a round area which measured approximately 3 cm in diameter and lay to the left of the midline in the occipital region The convolutional markings were increased The floor of the sella was slightly decalcified. The sella appeared to be slightly wider than normal There were several fragments of bone visible in the soft tissues of the neck, and a soft-tissue mass there apparently due to bulging brain substance.

On the eleventh hospital day an operation was performed

Differential Diagnosis

Dr. Donald Munro * It is evident, it seems to me, that at the first admission this patient was suffering from an acute rise in intracranial pressure — that was apparently the impression of the men who had charge of him — and further that the findings of the combined lumbar and ventricular taps were sufficient to warrant a presumptive diagnosis of cerebellar tumor There are, however, points to be discussed before making a more detailed diagnosis

I am not at all clear about the birth history The only statement is that he was one of normal twins It is notorious that twins are particularly subject to birth injury and have more difficulties on that account than children not born at a multiple pregnancy It is then stated that the patient developed normally during infancy No details, however are given as to the first part of his infancy I should like to know, for example, how well he nursed, whether his actions were quite up to those of the usual child, what his cry was like immediately after birth, and so forth It seems to me that this child might have sustained an intracranial injury at the time of his birth. If

* Assistant professor of neurological surgery Harvard Medical School surgeon in-chief of neurological surgery Boston City Hospital.

he had, could it have been one that would have caused the degree of increased intracranial pressure that he showed? In an eleven-year-old boy a pressure of 600 mm in the ventricle is, of course, enormous It is possible — but unlikely — that the cause might be a birth injury I have seen patients with subdural hematomas that have presented sufficiently few symptoms at the time of birth so that the development has been considered within normal limits Later a considerable hydrocephalus, with a slight degree of increased intracranial pressure, was found to be present I must say though that the pressure is usually not so high as it was in this particular case

The spreading of the sutures seems to me to be an important observation Bailey gives the year of closure of the sutures as nine Dwight, on the other hand, in *Piersol's Anatomy* says that sutures do not close until the twenties and thirties There is an obvious discrepancy there, explained by the fact that Dwight is referring to a solid bony closure, and Bailey to a closure that does not imply actual bony union To spread the sutures as much as they have spread here, the intracranial pressure must have been high for a long time It is on that account that I do not believe that the history of injury to the patient's head can be accepted as of great significance Any other cause for his symptoms at that time must also account for the long interval between the first and second admissions which was characterized by freedom of symptoms I do not believe that a birth injury would act in this way I think he had a tumor, but the evidence at the first admission does not make that certain

At operation, which was done on the tenth hospital day of this admission, a cerebellar exploration was done The vermis was found to be questionably abnormal The question arises whether the findings were sufficient to rule in tumor The commonest cerebellar tumors in children are the midline astrocytoma and medulloblastoma, with hemangioblastoma, ependymoma and a few others in decreasing order of frequency I believe it may be impossible to rule out a midline cerebellar tumor in a child unless the vermis is split I take it that it was impossible to split the vermis in this instance and, therefore, so far as the evidence goes from this operation, the tumor may or may not have been there except insofar as the diagnosis is supported by the history and the other findings Also, in the first admission no note is made as to how much x-ray therapy was given At the second admission it was noted by x-ray "There were multiple areas of calcification scattered throughout a round area which measured approximately 3 cm in diameter and lay to the left of the midline in the occipital region" I am not clear what the difference is between occipital area and occipital region The occipital region is notoriously the source of argument and error between x-ray men and clinicians because of the reference not only to the occipital lobe but also the occipital bone, which does not cover the occipital lobe, of course

A problem to settle in relation to this patient is to decide whether he had one lesion or two If the latter, we have to assume a tumor or a birth injury at the first entry, with the tumor's having recovered completely by virtue of the x-ray therapy as well as the decompression effect of the operation, or the birth injury's having come to a stand still and ceased to cause trouble In addition, we must assume that another lesion which was not present at the first entry developed in the interval and was present at the second That is quite possible of course It seems unlikely, however, and I think for a starter one might as well admit that this is all one disease If that is so, the disease, at the last admission, was obviously intracranial as evidenced by the symptomatology, the lumbar puncture, the cerebrospinal fluid and the findings such as they were at the first operation

I believe we can rule out sepsis, congenital defects and any ordinary systemic disease, such as syphilis or tuberculosis Injury at birth is not a factor because if this is to be interpreted as an injury, we must assume a different course than the one that the patient presented I therefore believe that this patient when he first came in had a tumor in the cranium and at the second admission the tumor was still there The problem then arises as to whether it was subtentorial or supratentorial Obviously, it was subtentorial. Not only the x-ray evidence but the clinical findings are in favor of that This is particularly true about the start of the history, which, in brief, is one of morning headaches with vomiting, in a child with choked disks That is almost pathognomonic of subtentorial tumor in a child

The x-ray films taken at the second admission contain essential information, and if it is permissible, I should like to have a roentgenologist interpret them for me

DR JAMES R LINGLEY By occipital region, we mean in this case the posterior fossa Over the left lobe of the cerebellum you see the operative defect, the occipital bone shows complete union of the sutures, but there is some convolutional increase and slight increase in pressure There is slight decalcification of the posterior clinoids with slight erosion Here you see the calcified mass well below the tentorium, you can very faintly make it out just to the left of the midline The

calcification is in small, rather smooth particles grouped together to form a mass of moderate size.

DR. MUNRO Is it attached to the bone?

DR. LINGLEY I cannot make out any bony attachment

DR. MUNRO It lies free in the posterior fossa?

DR. LINGLEY Yes.

DR. MUNRO That is distinctly helpful In view of that and the rest of the information I am convinced that this is one lesion That being so the time of onset must have been previous to his ninth year, because he had his first symptoms at nine years and presumably whatever caused these symptoms was in existence for a short time earlier Furthermore, the x-ray provides evidence that tumor is present, at any rate at the second admission If we assume that it was one disease the tumor must have been present at the first admission too The lesion is an expanding one That is evidenced by the spreading sutures, by the scalloping by the changes in the sella and, on the second admission, by the bulging of the occipital decompression which is described in the x-ray report. High intracranial pressure was also present. There was, however, an interval of apparent nonexpansion for a time. This may have been due to the decompression effect of the operation, to the x-ray therapy, possibly, in part at least to a cerebrospinal fluid block, and undoubtedly to the slow growth of the tumor

The question of location within the posterior fossa is settled by the x-ray findings The tumor is to the left of the midline.

What type of tumor may this be? I feel very strongly that it is worse than useless from the therapeutic point of view to speculate preoperatively as to the type of brain tumor All who do this work have been led astray by the assumption that if the patient has a certain history he must have a favorable or an unfavorable type of tumor Therefore, the speculation as to the kind of cell that makes up a suspected tumor is rather an academic issue and is at best merely a matter of guesswork. There are certain tumors, however, that characteristically occur in children These are the intracranial dermoids or epidermoids known as cholesteatomas, the blood vessel tumors, the cerebellar astrocytomas and ependymomas, and the subdural hematomas I should eliminate the medulloblastomas, although there have been long survival periods—up to seven years—in patients with such tumors It seems to me, however, that fourteen years is too long to permit one to assume that this patient is suffering from a medulloblastoma Pharyngiomas occasionally gravitate down in front of the tentorium through the incisura and may cause symptoms much like these Papillomas and chordomas have long histories The commonest calcified tumors are the dermoids better known as cholesteatomas, which they are not The dermoids usually start in the recess or lower end of the fourth ventricle. I believe that if this child had had a dermoid, it should have been visible at the first operation, making the diagnosis unquestionable at that time I think the dermoids can be ruled out on the evidence A subdural hematoma can also be ruled out because of the history and the lack of characteristic findings by x-ray The blood vessel tumors, however, are another story Such tumors frequently start in the vermis which as you know was not opened at the first operation They also may start at the posterior end of the fourth ventricle as well as in the hemispheres This latter location would correspond to the site of the calcification in this case Blood vessel tumors, however, calcify only rarely in the cerebellum but they are acted on by x-ray therapy which if this were such a tumor might explain the intermission during which the patient was well. I think that this might be a blood vessel tumor Cerebellar astrocytomas start in the vermis, calcify only infrequently and do not react to x-ray therapy It is conceivable that this might be the calcification of an astrocytoma However, I think it is unlikely and believe astrocytoma can be ruled out. An ependymoma which has started under the vermis in the floor of the fourth ventricle is usually not visible when small unless the vermis is split This tumor calcifies frequently, reacts favorably to x-rays and is characterized by spreading laterally from the midline position It seems to me to be the best guess relative to the type of tumor from which this patient suffered My diagnosis then, is a tumor of the posterior fossa which started in childhood, which was not delimited at the first operation and which was present at the time of the second operation as a calcified mass to the left of the midline and which was probably an ependymoma

DR. HENRY R VIETS When the patient was first in the hospital, fourteen years ago, at the age of eleven, two questions were considered Could the disease be traumatic? Was it due to brain tumor? In regard to trauma, there was some evidence that trauma might have occurred at the time of birth It was felt however that the period of nine years subsequent to birth, before symptoms came on did not justify a diagnosis of trauma from cerebral injury during delivery Secondly there was the history of an accident two years before entry but this also did not satisfy us as the cause of his symptoms at that time. The

diagnosis most seriously considered, therefore, was brain tumor The symptoms located this lesion in the cerebellar fossa, and medulloblastoma was thought to be the most likely type of tumor The main reasons for this were the location of the tumor in the cerebellum, the frequent vomiting, which indicated that the tumor was probably in the midline, involving the vermis of the cerebellum, and the age of the patient Medulloblastoma is the most frequent cerebellar tumor in children, it is always in the midline, and vomiting is a constant symptom The operation, however, did not disclose a tumor, although the vermis was abnormal, the tumor was probably present but not found X-ray study had already indicated that the tumor was of some years' duration

On the second admission, fourteen years later, the evidence for tumor was more definite there were cerebellar signs pointing to some dysfunction of the left cerebellar lobe, the brain was protruding at this point, and x-ray films disclosed a calcified mass lateral to the midline and on the correct side.

Considering the duration of the tumor, its location and the patient's age, it was then believed that the most likely type of tumor was astrocytoma Astrocytomas occur frequently in the cerebellum, they begin early in life, although they may not disclose themselves until the patient is an adult, they are practically always lateral and not in the midline, and they seldom involve the cranial nerves, as was the case here Therefore the patient had evidence of cerebellar tumor with typical signs and the usual duration of symptoms It was expected that the astrocytoma would be successfully removed, and the prognosis, in general, was favorable There was nothing to indicate whether the astrocytoma was cystic or solid, although the calcification pointed more to a solid tumor

Clinical Diagnosis

Astrocytoma of left cerebellum

Dr Munro's Diagnosis

Cerebellar ependymoma, left hemisphere

Anatomical Diagnosis

Astrocytoma of left cerebellar hemisphere.

Pathological Discussion

Dr Charles S Kubik Dr John S Hodgson operated and removed a tumor, an astrocytoma, measuring 7 5 by 5.5 by 3 cm., from the left cerebellar hemisphere It was a firm, discrete mass, and I believe that all of it was taken out There are two unusual features an old organized hemorrhage and numerous calcareous concretions I have not seen calcification in any other case of cerebellar astrocytoma but have seen it in one or two cases of cerebral astrocytoma The cerebellar tumors of this type usually become cystic, and so give rise to symptoms before the tumor itself is very large or, presumably, as old as this one

Dr Tracy B Mallory This patient is still in the hospital convalescing What would you hazard as to the prognosis?

Dr. Kubik If he is all right now I think the prognosis is very good

Dr. Viets It is the most favorable type of glioma He ought to do excellently You would expect practical cure in a case like this

Dr Munro I should say "cure"

CASE 25312

Presentation of Case

A seventy-one-year-old American engineer entered the hospital with the complaint of swelling in the right popliteal space

One year before entry he first noticed a small tumor in the right popliteal space which was about the size of a walnut For the next ten months it remained about the same size, but two months before entry began to increase in size, growing steadily up to the time of entry He had no pain or other symptoms until a week before entry when while kneeling, he suddenly experienced a sharp pain in the region of the mass The pain subsided somewhat after a short time but persisted as a steady dull ache up to the time of entry For several years he had had some edema of his ankles but during the week before entry his right leg had become more swollen than ever before, and for the first time had a bluish discoloration

Thirty years before entry he was said to have had a heart attack and was treated with digitalis There were no subsequent attacks, but he did have moderate dyspnea on exertion His past and family histories were otherwise not contributory He thought that he might have lost some weight in the previous six months

Physical examination revealed a rather thin but fairly well-developed man apparently in quite good health The heart was somewhat enlarged downward and to the left, and there was a harsh systolic murmur at the apex The pulse was slightly irregular, and the blood pressure was 180 systolic, 125 diastolic The lungs and abdomen were normal There was some edema of both legs, more marked on the right, which disappeared during the course of a few days in bed In the right popliteal space there was a firm, nonpulsating

tumor measuring about 10 by 7 by 7 cm., which appeared to have several cystic areas on its surface It was not attached to the femur but seemed to be connected with the hamstring tendons

The temperature was 98°F., the pulse 60 and the respirations were 20

The urine examination was negative. The blood showed a red-cell count of 5,400,000 with 80 per cent hemoglobin, and a white-cell count of 8700 The blood Hinton test was negative. The non protein nitrogen was 35 mg per 100 cc

X-ray films of the right knee showed a large rounded soft-tissue tumor in the upper part of the popliteal space. It was slightly more dense than the soft tissues Its margins were indefinitely defined, and it extended into the subcutaneous tissues. The arteries in the region showed no cal cification, and there was no evidence of disease of the bone or joint An x-ray film of the chest showed a definite increase in the supracardiac shadow, apparently due to tortuosity of the aorta In the oblique view the aorta was visible through out the greater part of its course, and although very tortuous, it did not appear to be dilated. The heart shadow was increased to the left, and the curve of the left ventricle was prominent

An operation was performed on the fourth day

Differential Diagnosis

Dr. Clifford C. Franseen With a mass of this type in the popliteal space the first thing that comes to the minds of most of us is a popliteal aneurysm, and it was obviously also in the mind of the examiner, if we are to judge by the find ings that he recorded One physical finding that we should be most interested in knowing about in differential diagnosis of such a mass is the presence or absence of a bruit, but nothing is men tioned about it I think we must assume it was listened for and was not present It is more than likely that he would have had more difficulty with the circulation of his extremity had this been a popliteal aneurysm, and in view of his relatively good cardiovascular condition and the absence of calcification in the arteries in the region, together with a negative Hinton test, the diagnosis of pop liteal aneurysm is still further placed in doubt In considering the sudden sharp pain in the region of the mass on kneeling partial rupture of an aneurysm and subsequent thrombosis might be con sidered, but the same sharp pain might be ex perienced on sudden compression of any mass in this region If partial rupture and thrombosis had occurred he would certainly have had more symp toms and signs and more difficulty with the cir culation of his extremities than is mentioned here

By reason of compression of the nerves and ves sels in this limited space, any mass in the popliteal space might give symptoms such as the dull ache of which he complained It might also give him some edema of the legs The problem, therefore, becomes largely one of differential diagnosis of tumors which may occur in the popliteal space. It must be remembered that any mass in this loca tion may give the impression of being cystic be cause of the character of the overlying fat in this region Therefore, in our differential diagnosis we must consider solid tumors which may have given the examiner the impression of being cystic and once solid tumors in which degenerative areas may have appeared to produce a cystic feeling Lipomas may give the impression of being cystic. The soft areas in a fibromyxoma similarly may feel cystic. Other solid tumors which must be considered are the fibrosarcomas of fascial, periosteal or joint capsule origin and also those of neurogenic origin The xanthomatous giant-cell tumors of tendon sheath origin must also be included If, however, we have complete confidence in the examiner and accept his statement that the mass had several cystic areas on its surface we must consider tu mors which are primarily cystic. Among these a popliteal cyst is perhaps the most frequent This is usually of the form of a hyperplastic bursitis aris ing from the bursa between the semimembranosus and gastrocnemius muscles It may or may not connect with the knee joint In this group are also included the posterior hernias of the joint capsule because it is believed by some observers who have made careful anatomical investigations that these popliteal cysts communicate with the knee joint A ganglion must also be considered, for it is possible that many of the ganglia so diag nosed have actually been popliteal cysts of the type previously mentioned

Another tumor which may at times be cystic is a synovioma Although this tumor is relatively rare, a number of reports have appeared in re cent years. They frequently have multiple cystic areas in them and may show a bluish discolora tion over the tumor, as was suggested by one de scriptive note in this case These tumors metas tasize to the lungs with great regularity, and if the chest plate had shown metastases we could favor this diagnosis even more strongly In the x-ray film of the soft tissue of this region it was stated that the margin was indefinitely defined and that the mass extended into the subcutaneous tissues This suggests that there had been some invasion by the tumor and does not quite fit with a popliteal cyst which should have a well-defined outline. Moreover, a popliteal cyst would have a single cavity and it was stated here that there were several cystic areas on examination Synovi

omas usually appear at an earlier age than holds in this case, but among the reported cases there are at least two in the seventies Putting everything together, therefore, I should favor first a diagnosis of synovioma, in spite of its rarity, it fits best with the description given My second choice would be a popliteal cyst

DR CHANNING C SIMMONS Is neuroepithelioma a synonym for synovioma?

DR TRACY B MALLORY In my estimation, yes, but not everyone would agree with me on that

DR SIMMONS I think that ought to be considered

A PHYSICIAN How about endothelioma?

DR MALLORY Endothelioma used to be a very popular diagnosis for a great variety of tumors We have not made that diagnosis in this hospital in eleven years and have felt not the slightest need to make it. It is easy to imagine, however, that synoviomas might more readily be called endotheliomas than would be any other tumor, because they do contain spaces lined with a layer of cells which is suggestive of endothelium

PREOPERATIVE DIAGNOSIS

Fibrosarcoma of right popliteal space

DR FRANSEEN'S DIAGNOSES

Synovioma?
Popliteal cyst?

ANATOMICAL DIAGNOSIS

Synovioma

PATHOLOGICAL DISCUSSION

DR MALLORY This was quite a large tumor, very soft, and even after removal felt cystic on external palpation, but when it was cut into, no cyst of any significant size was found and its fluctuant character was simply due to its myomatous consistence Microscopic examination showed the characteristic picture of a synovioma, a combination of two types of cells, one which is cuboidal and might be considered either epithelium or endothelium, according to one's prejudices, the other a smaller cell which is somewhat spindle-shaped This type of structure has been regularly found in the tumors that have been reported as synoviomas, but an absolutely identical structure has been found in tumors unconnected, so far as can be made out, with joint spaces and arising apparently from peripheral nerves, and the name neuroepithelioma has been given to those That was the original diagnosis we made on this case though I have no doubt that the majority of pathologists would call it synovioma After all I believe they are synonyms

This case is a little unusual in that, although the location in the popliteal space is characteristic, the age is quite unusual They are ordinarily tumors of young people This is the only case we have appearing in an individual of relatively advanced age It proved, as they usually do, to be a highly malignant tumor It recurred in eight months, in ten months there were pulmonary metastases, and the patient died within a year

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ADVERTISING AND THE LEARNED PROFESSIONS

Advertising by the members of the so-called learned professions is becoming a problem of great social importance, but before a satisfactory solution can be reached there is needed a clear conception of just what constitutes proper advertising and in just what lies advantage or disadvantage to the public. Furthermore, what are the learned professions? There is also a problem involving possible advantage or disadvantage to the advertiser.

One finds advertising by physicians characterized as proper or improper, sometimes as ethical or unethical. The publicity which some physicians give themselves by ostentatious attendance at medical meetings, discussion of papers on all possible occasions, writing and reading papers with little scientific or literary value whenever a periodical will print or a society will listen, even writing a book if a publisher can be persuaded to make a new venture, is quickly recognized and generally indulgently condoned by fellow members of the profession, some of whom may perchance feel a little envious if they do not themselves possess the needed gifts. This is considered legitimate advertising, and if, through overfull measure or advertence on the part of the physician, some knowledge of it escapes to those outside of the profession, generally little harm is done. It is advertising specifically directed to the non-professional that is usually considered unethical, and the medical profession has been fortunately rather free from this reproach, some flagrant exceptions serving but to bring out more clearly the restrained practice of the great majority.

Restriction of advertising by legal enactment has been justified usually on the ground that deception or tendency to deception is against the public interest and in commercial fields such restrictions are widespread. A Massachusetts statute goes much farther than this, however, in the case of one of the learned professions, namely dentistry. The statute denies to a registered dentist, not merely the use of dishonest or deceptive advertising but also the right to seek patronage through advertising in modes deemed harmless and right when employed in commercial business." The constitutionality of this statute has recently come before the Massachusetts Supreme Judicial Court for consideration.

The specific provisions of the statute are summarized in the opinion* written by Justice Lummus as follows:

> The essence of the statute so far as relates to the five counts, is that no registered dentist, person practicing denturity or dental hygienist" shall "include or permit or cause to be included" in any manner of advertising "any written or spoken words or statements of a character tending to deceive or mislead the public, or claiming ... the performance of painless operations of a dental or oral surgical nature" or 'tending to solicit patronage for his business services, advice or products" or "advertising to use any system of anesthetics without truly and accurately naming the same" neither shall he "make or set forth any promises, guarantees offers, inducements, representations, statements or rewards of a character tending to influence, persuade or induce persons to seek, employ

*Commonwealth v. Fred P. Brown, Mass. Ad. Sh. (1939) 51

or patronize his business, service, advice or products", with certain qualifications permitting acts that apparently would be prohibited by the general language quoted

The Commonwealth has an interest in attracting to the learned professions men of ability, capable of adorning them, and in enabling such men to survive in competition with others It has an interest in spreading as widely as possible among its citizens the benefit of the professional services of the most competent practitioners as distinguished from those who barely possess the minimum qualifications for beginning practice at all It has an interest in leaving its professional men free to improve their (A S p 522) professional qualifications, without the necessity of devoting time and effort to the competitive pursuit of clients or patients It has an interest, too, in freeing its citizens from the pressure of salesmanship in the formation of confidential professional relations

The Legislature might find, and apparently did find in the case of dentists, that these public interests would be injuriously affected by free competition among practitioners without restraint as to methods The Legislature might consider that, in general, practitioners of high character, deep learning and great skill are more conscious of vast areas of knowledge not yet explored than of the narrow fields in which they may have attained mastery, that they are restrained in speech, and careful that promise never outruns performance, and that as a class they are either incapable of advancing themselves by brazen self laudation, or scorn resort to that means The Legislature might conclude from human experience that practitioners of scant competence, like charlatans and demagogues, are likely to make up for want of genuine merit by an expert knowledge of mass psychology and great skill in appealing to the hopes and emotions of the uninformed and credulous Advertising practitioners, as fast as discovery of their comparative incompetence causes the loss of clients or patients, for a long time can obtain new ones through skilful publicity It may be that even with complete freedom in advertising, practitioners of unusual competence ultimately would succeed and others ultimately would reach the level of their merits, but in the meantime thousands if not millions of citizens might receive inferior service in the belief, induced by skilful advertising, that it was superior Under the traditional method of professional advancement through the recommendation of satisfied clients or patients, progress may be slower, but it bears more relation to merit. The Legislature, taking the view which has been expressed, might conclude that the regulations made were for the protection of the public interests

The restriction and even the prohibition of advertising by members of the learned professions constitute a lawful (A.S p 523) exercise of the police power, and not, as has been contended, a violation of constitutional provisions protecting liberty and property, or discriminatory legislation

The "learned profession of medicine" may well ponder these words, for they point out with unusual clarity and skill an aspect of our activity to which we pay too little attention, and they serve to remind us of our obligations to the Commonwealth

But beyond the constitutionality of such legislation is the question of its propriety Is it fitting that physicians should demean themselves by advocating a similar law for medicine? This, however, is not quite the right question More appropriately we may ask, Has medicine already become so commercialized that a similar law is needed for us? Recent advertising of the teaching of "office tricks" to physicians may indicate the depth of commercialism to which certain members of the profession have degraded themselves, but the relatively few instances of such degradation are not of sufficient magnitude to demand legislation The public still generally believes that commercial advertising by a physician probably stamps him as professionally unworthy However, it is possible that the time will come when medicine may have to follow the example of dentistry in this matter Whose is the responsibility to make such a law unnecessary for the medical profession?

EDUCATIONAL QUALIFICATIONS FOR PUBLIC-HEALTH SERVICE

THERE certainly is a growing demand that the public health be safeguarded in every possible way, particularly as an ever-increasing number of persons are entering the field as statisticians, sanitarians, public-health engineers and school-health educators It is gratifying, therefore, to find that such a responsible organization as the American Public Health Association has, in a series of reports, defined the qualifications and educational training which is believed advisable for this group of public servants

The Association does not intend to set up arbitrary standards which must be attained before an individual is regarded as a fit candidate for office But the "professional educational qualifications specified should be regarded as something to strive for or work toward"

The standards that the Association has set are admittedly high, but high they should be as the field of endeavor is one of great importance. This is particularly true, perhaps, in the field of school health It is stated "Scientifically and pedagogic

ally sound health programs will be forth-coming only when teachers and supervisors of school health are adequately trained for this work."

We urge all those interested in these matters to obtain from the Book Service, American Public Health Association, 50 West 50th Street, New York City, copies of the five reports which are distributed free of charge

MASSACHUSETTS MEDICAL SOCIETY

SECTION OF OBSTETRICS AND GYNECOLOGY*

RAYMOND S TITUS, M.D., *Secretary*
330 Dartmouth Street
Boston

ACUTE INVERSION OF THE UTERUS

Mrs. G B., a twenty four year-old para II entered the hospital at term and in active labor on August 17 1926 After four hours of labor she was delivered of a normal female child weighing 6 pounds, 11 ounces

No family history was obtained The patient had never been seriously ill and had never been operated on Her first pregnancy two years previously, resulted in a long labor and a high forceps delivery Catamenia began at twelve were regular with a twenty-eight-day cycle and lasted five days without pain Her last period was November 13, 1925, making her expected date of confinement August 20 The prenatal course during the present pregnancy had been entirely uneventful

Following the birth of the child, the placenta did not come away easily after several forceful attempts using the Credé method it did come away, although some of the membranes were retained. The cervix was closed down so that one could not get the hand into the uterus. Suddenly the patient collapsed and went into deep shock and the pulse became thready and irregular The lips were cyanosed, the respirations irregular and the skin clammy and perspiring The systolic blood pressure was 50, the diastolic unobtainable Stimulative and shock treatment was instituted The uterus felt hard and the fundus was midway between the umbilicus and the symphysis On feeling for the fundus, an indentation, round and smooth, was found in the body of the uterus On either side of this indentation could be felt masses which were suggestive of the tubes and ovaries A diagnosis of acute inversion of the uterus was made.

A laparotomy was performed and the fundus was found to be inverted in the body of the uterus. The tubes and ovaries on either side had been pulled into the inverted area The patient was transfused with 500 cc. of citrated blood, Allis forceps were attached to the inverted fundus and it was gradually replaced

Following reinversion of the uterus, the patient's condition dramatically changed Her color improved, the pulse assumed a much better quality, and the blood pressure immediately after the operation was 100 systolic, 80 diastolic. The abdominal wall was repaired in three layers Warm saline packs were placed above the uterus, which immediately assumed a normal tone and contracted well.

The patient made an uneventful postoperative recovery and was discharged well to her home on the seventeenth postpartum day

Comment It is interesting that the symptom of shock — collapse — is noticed in cases of acute inversion of the uterus without unusual hemorrhage. It is also remarkable how quickly the symptoms of shock subside when the inversion is reduced

This inversion was very likely influenced by the forceful attempts to remove the placenta by the Credé method Apparently an attempt was made to enter the uterus before the diagnosis of inversion had been made, in order to obtain pieces of membranes that had not come away For such a procedure there is very little excuse. However since an attempt had been made and since the cervix had been found to have shut down, it is obvious that no further attempt should have been made to replace the inverted uterus by vaginal manipulation

* A series of selected case histories by members of the section will be published weekly Comment and questions by subscribers are solicited and will be discussed by members of the section

NEW HAMPSHIRE MEDICAL SOCIETY

GEORGE — BERT D GEORGE, M.D., died at Rochester on May 21 at the age of sixty six.

Dr George was born in East Calais Vermont, March 22, 1873 the son of Albert and Lucetia (Dutton) George. He attended Goddard Seminary at Barre, Vermont, Tufts College and the University of Vermont College of Medicine.

He was an honorary member of the Strafford County Medical Society and a member of the New Hampshire Medical Society

Besides his widow he is survived by a son Bert D George, Jr., of Rochester and a daughter Mrs. Ruth Tarr of Detroit Michigan.

MISCELLANY

NOTES

At the annual meeting of the Board of Registration in Medicine in July, Dr Francis R. Mahony, of Lowell, and Dr Stephen Rushmore, of Boston, were respectively elected chairman and secretary for the ensuing year

Dr Richard Wagner, Viennese pediatrician, who has been engaged during the past year in research work on diabetes in childhood at the New England Deaconess Hospital under Dr Elliott P Joslin, has accepted an appointment on the faculty of Middlesex University School of Medicine He is a medical graduate of the University of Vienna, where he served from 1924 to 1938 as assistant professor of pediatrics Dr Wagner worked in the department of biochemistry at Strassburg under the late Professor F Hofmeister until 1914 After the War, he was assistant at the University Children's Hospital under the late Professor von Pirquet until 1931 He later was appointed consulting physician for newborn children in the obstetric clinics at the University of Vienna, and in 1933 he became the head of the outpatient clinic in the Kinderkranken Institut in Vienna. Dr Wagner will engage in both didactic and clinical instruction at Middlesex University and Middlesex Hospital

CORRESPONDENCE

ARTHUR T LEGG

To the Editor In the passing of Dr Arthur T. Legg, the Massachusetts Department of Public Health sufferer' a severe loss He was not only a consultant to the department whose opinions were highly valued, but an influential member of the medical profession, who by wise advice and counsel played a considerable part in maintaining the satisfactory relation between the profession and the Department of Public Health.

Dr Legg served the Department of Public Health in two capacities He was the clinic consultant for the Haverhill Crippled Children's Clinic, and the senior orthopedic surgeon at the Lakeville State Sanatorium

His work in Services for Crippled Children was not confined to conducting one of the ten monthly statewide clinics Probably his most important and far reaching influence was exerted as a member of the General Advisory Committee and of the Technical Advisory Committee of Services for Crippled Children As a member of these committees his aid during the summer of 1936, when the Department of Public Health was laying the foundation of Services for Crippled Children and was obtaining the good will of the medical profession as the cornerstone of the structure, will never be forgotten by those who went to him for advice As clinic consultant at Haverhill and as orthopedic surgeon at the Lakeville State Sanatorium, he will always be remembered by his colleagues and by the many children whom he served

Dr Legg was always willing to give his services No matter what request was made of him he responded without a hint that he might have had other plans He was not communicative, he never expressed an opinion unless he was sure it was really wanted He was most modest one always felt that he had no idea how he was revered by his colleagues His judgment in respect to treatment was superb He was ready to take up with new methods but only if they had been proved to be efficacious He was conservative at all times

The members of the staff of the Massachusetts Department of Public Health, and especially those who worked with Dr Legg and knew him personally, all feel that they have suffered an irreparable loss

PAUL J JARMAUH, M D,
Commissioner of Public Health

State House,
Boston

MIDDLESEX UNIVERSITY

To the Editor May I reply to certain statements contained in your editorial in comment upon the Annual Oration delivered by Dr Elliott P Joslin?

Middlesex University has provided the Massachusetts Approving Authority with a financial statement of receipts and expenditures, and a balance sheet, prepared at considerable expense by a certified public accountant. It has welcomed the members of the Approving Authority on several visits, and has answered every question that has been asked by them on these occasions

Your editorial further states "As to the financial resources of Middlesex, requests for information at the State House have shown that there are no published statements relating to this subject at the present time." It is neither a legal requirement nor a prevailing custom for educational institutions to file statements as to their financial resources at the State House, and it is unfair to imply that we are departing from ordinary procedure in this respect. Does Harvard, Boston University, Tufts or any other Massachusetts college file such financial statements?

We read with pleasure in your editorial that "if Middlesex shows a determination to meet the requirements for an approved school, the sympathy of the Massachusetts Medical Society will be cordial to the highest degree.' We submit that we are showing not only a determination, but so far as is in our power, the ability to meet these requirements, but we need more than sympathy from the Society, we need friendship and cooperation

We have erected a plant that even our severest critics admit is superb We have made many outstanding additions to our medical faculty during the past year that you have felt were worthy of mention in the *Journal* We have, for almost twenty years, voluntarily adhered to the entrance requirements of the American Medical Association We have not accumulated or acquired an endowment fund, because we are not magicians We are working hard on the problem of clinics, in the solution of which we would gratefully welcome the assistance of the Society

We deeply respect the sincerity of Dr Joslin, and intend to be guided by his advice. We think he is unselfishly trying to help in a difficult situation

C RUGGLES SMITH, *President*

P S — The receipt of our financial statement was acknowledged by Dr Rushmore on July 14 I wonder if this was not early enough for a correction to have been made in the editorial of July 20

C R S

Waltham, Massachusetts

REPORTS OF MEETINGS

NU SIGMA NU LECTURE

On April 25, the Harvard Chapter of Nu Sigma Nu presented Dr Lewellys F Barker, visiting physician at the Johns Hopkins Hospital and professor of medicine,

eritus, at Johns Hopkins University School of Medicine. e formidable title of his talk Hormones and Vita ns, indicates the magnitude of the speaker's under ing but gives no clue to the unmistakable success he ieved in one too short hour Since discussion of any e aspect of the subject was impossible in such a brief k, Dr Barker chose to survey the high points of the ire field, with its recent trends and advances.

The hormones, as is well known, are "chemical mes- gers" elaborated by the glands of internal secretion d transported by the blood stream throughout the organ- n, where they act at some distance from their source. any of them have been isolated and crystallized in pure emical form, whereas others have been synthetically pre red. On the other hand, some so-called hormones are rely partially purified fractions of glandular extracts, d it is conclusions drawn from experiments with this pe of substance that are widely quoted and often osely inaccurate and unreliable.

Dr Barker is one of that legion of endocrinologists who nsiders the pituitary the "master gland" although it is ted on to a lesser extent by the other endocrine glands a reciprocal arrangement. The anterior lobe of this gan is the most important part from the hormonal ndpoint, elaborating the various tropic hormones which mulate the other glands, and exerting a controlling fect on fat and carbohydrate metabolism. The mother bstance originally obtained from the gland is now own to be a complicated protein containing many dif rent hormones most of which have been prepared, so r as only relatively pure fractions. Some idea of the ass which now prevails can be gathered from a con- deration of the growth hormone. It is now questioned to whether there may not be more than one such bstance, while Ruddle considers the possibility of its ing a combination of adrenotropic and thyrotropic hor ones rather than a separate entity However until pure ystalline substances are used for these investigations, incontrovertible conclusions are not possible.

The gonadotropic hormone of the anterior pituitary acts n the ovary in the female to produce ovulation — through ne follicle stimulating hormone (F.S.H.) — and later teinization — through the lutein-stimulating hormone L.S.H.) These substances are similar to, but not iden- cal with, the prolans found in pregnancy and produced y the placenta. Since they were originally considered lentical, one nomenclature still refers to F.S.H. and .S.H. as prolan A and B respectively Since both male nd female pituitary glands are alike, it is not surprising o find that these tropic substances are also found in the ale. F.S.H. acts on the seminiferous tubules to bring bout spermatogenesis, and may form estrin. L.S.H. xerts its effect on the interstitial cells of the testes to pro- note the growth of the secondary sex characteristics and s responsible for the formation of the androgens.

In regard to the thyrotropic hormone, there has recently risen some doubt as to the specificity of the pituitary at he site of stimulation. Although an increase of this sub- tance does cause overactivity of the thyroid gland with ll the clinical signs and an increased basal metabolic ate, the latter can function in the hypophysectomized nimal — albeit at a somewhat lower level. Some recent ork seems to indicate that a compound functionally simi ar to thyrotropic hormone may be extracted from the ar to thyrotropic hormone may be extracted from the ovary and adrenal gland

The corticotropic hormone is responsible for stimula- ion of the adrenal cortex and causes various manifesta- ions depending on the time of life it appears. Over ctivity in utero results in pseudohermaphrodism in women due to the tendency for masculinization in an incompletely differentiated fetus. In infancy and child- hood, girls exhibit precocious puberty and menstruation followed by amenorrhea and virilism whereas boys de- velop early and marked maleness. After puberty women tend to assume male characteristics, and rarely men have a tendency to feminism.

The pancreatotropic hormone, if such an entity really exists, is antagonistic to the corticotropic factor and causes stimulation of the islands of Langerhans with re sultant decrease of blood sugar

There is, however a diabetogenic hormone, closely associated with the corticotropic factor which is directly antagonistic to the pancreas. While the latter fundamen- tally tends to burn sugar the former exerts a glycostatic effect.

Another anterior pituitary factor about the existence of which some controversy still rages is the parathyrotropic hormone, which allegedly controls the blood-calcium level through the parathyroid glands.

Finally there is the lactogenic hormone, a secretogogue which will always function after the breast has been primed by estrin and progestin even in the male. This latter action merely makes the necessary suitable substrate required by the activating hormone.

The intermediate lobe of the pituitary does not seem to play any significant role in human beings, while the posterior lobe is of nervous-tissue origin and is associated with vasomotor and smooth-muscle control, as well as with water metabolism

Some of the more important clinical manifestations of anterior pituitary dysfunction are gigantism and acro- megaly supposedly due to an increase of acidophilic cells which allegedly contain all the tropic elements except the gonadotropic hormones Frohlich's syndrome, the hypo- sexual adipose person who often shows associated supra sellar cysts Simmonds's disease, in which there is hypo- function of all the pituitary elements and secondarily of the other endocrine glands. The Cushing syndrome of virilism is probably always dependent on adrenal over activity due either to primary disease of that gland or to pituitary stimulation through the corticotropic hormone, rather than being the result of a basophilic adenoma of the hypophysis.

The thyroid gland is the site of manufacture and storage of thyroglobulin which may be separated into thyroxin which is only slightly less potent than the complete hor mone, and diiodotyrosine, which is essentially inactive. The clinical manifestations of imbalance of this regulator of general cellular metabolism are Graves's disease and myxedema with their characteristic signs and symptoms. The striking effect of substitution therapy in the latter condition is one of the most gratifying in medicine.

The parathyroid glands with their product, parathor mone, are among the more recent additions to the group Ablation experiments and subsequent tetany were an ac companiment of many early thyroidectomies, and unavoid able injury or removal is still a constant source of con- sternation to the surgeon particularly during re-opera tions. More recently treatment with purified parathor mone has altered the course of both surgical and idio- pathic tetany in remarkable fashion. Oversecretion of the parathyroid hormone, due either to hyperplasia or to functioning adenomas of the glands, leads to the elevation of blood calcium at the expense of the bony storehouse. This consequently causes cystic disease of the bones with fractures and calcium deposits in the other tissues, par ticularly the kidneys. It is now known however that neither of these more severe and obvious complications

may be necessary to diagnose hyperparathyroidism The increased blood calcium leads to decreased muscle tone, particularly manifested in the gastrointestinal tract by poor appetite and bowel habits In such suspected cases, careful blood-chemistry studies may furnish the necessary proof of the underlying disease. In such blood-calcium determinations, however, one must consider the plasma protein value, for the calcium measured is partly combined with protein and a normal total calcium may really signify an elevated level if a low protein content is present. Careful surgical treatment is gradually proving more successful in the treatment of such cases of hyperparathyroidism

The active principle of the adrenal cortex has not yet been obtained in a pure state, yet many important observations have been made concerning this gland The functions of the hormone have been noted above under the corticotropic hormone of the pituitary, which merely sumulates the cortex to elaborate its specific hormone. On the other hand, epinephrine, the principal product of the adrenal medulla, has been purified and studied for some time. It is fairly well established that this substance is closely allied with the functions of the sympathetic nervous system Overactivity of this portion of the gland leads to paroxysmal hypertension, while hypofunction results in the classic syndrome of Addison s disease in which the cortex is also involved Treatment of this latter condition has received notable impetus from the introduction of cortin, which has been employed with temporary success either with or without the addition of epinephrine

Currently, the field of endocrinology is exhibiting most activity in regard to the intriguing sex hormones In women, two distinct hormones were primarily distinguished, one from the ripened follicle and the other from the corpus luteum Further improvement in methods of isolation and purification has enabled one to identify seven estrones in nature, but still only one progesterone. The former have been isolated from the ovary, from the urine of pregnant women and mares and from the urine of stallions Until synthesis became possible, this latter source was, surprisingly, the richest. Progesterone has been obtained from the ovaries, placenta and pregnant urine and is synthesized as pregnandiol In men, on the other hand, there have been four hormones isolated and chemically identified. These have the generic name of androgens, testosterone being the most powerful one physiologically The latter is now being used medically for many intractable glandular problems, including benign prostatic hypertrophy

The final gland of internal secretion discussed was the pancreas with its well known product, insulin This has finally been synthesized in crystalline form, and is found to consist of a long chain of amino-acids Besides the well known effects of the various forms of insulin used so successfully in treating diabetes mellitus, Dr Barker and others have used this hormone, particularly protamine zinc insulin, for undernutrition, with striking results.

The surgeon has also been manifesting unwonted enthusiasm in the problem of endocrinology and has successfully treated many cases due to endocrine dysfunction Dr Barker mentioned particularly the spectacular results that follow extirpation of paragangliomas in paroxysmal hypertension, islet tumors of the pancreas in hypoglycemia, hyperfunctioning parathyroid glands in cystic disease of bones and renal calculi, and arrhenoblastomas and adrenocortical tumors in women exhibiting the so-called Cushing syndrome.

Dr Barker, in a brief review of the outstanding events in the past history of the vitamins, cited the observation of Hopkins in 1912, who stressed the importance of accessory food factors besides fats, carbohydrates and proteins One of the most amazing bits of clear arm chair philosophy in medical history, deduced purely from a perusal of the literature, was the recognition by Funk of the underlying causes of beriberi, scurvy, rickets and pellagra, and the naming of the vital factors involved as 'vitamins" Then followed years of careful and painstaking experiments with diets lacking in various essential foods and the isolation and even synthesis of most of the substances now known as vitamins

Vitamin A, the antixerotic factor, has been isolated and synthesized The principal precursor in nature is β-carotene, which can be split into two molecules of the pure vitamin This is one of the fat-soluble vitamins, and the bile acids are a prerequisite for its absorption via the gastrointestinal tract. Most abundant sources of this accessory factor are butter, fat, egg-yolk, cod liver oil and yellow vegetables The necessary intake for the adult is approximately 3000 to 3800 international units per day The commonest manifestations in persons lacking vitamin A are xerophthalmia, especially in infancy, and essential hemeralopia or night blindness This latter condition is probably much more prevalent than formerly supposed, and its importance in contributing to automobile accidents is gradually being recognized

Vitamin B_1, the anti-beriberi factor, has been isolated as thiamin chloride and synthesized It is a water soluble substance which is easily absorbed, stored to only an insignificant degree, and excreted in the urine. Principal sources of this compound are cereals, yeast, milk, eggs and liver Approximately 200 to 300 units per day are necessary in the adult. Although beriberi is the common form of thiamin deficiency seen in the Orient, the usual clinical manifestation seen in this country is alcoholic polyneuritis, which is now recognized as a pure deficiency disease rather than a toxic condition Such addicts may be relieved by the intramuscular injection of 200 to 300 units of the vitamin per day, even though the alcohol intake is continued

Vitamin B_2 has recently been subdivided into two isolated and synthesizable substances, riboflavin and nicotinic acid. Though the role of the former has not been thoroughly determined, the latter has been established as the pellagra preventing vitamin The outstanding manifestations of dermatitis, diarrhea and dementia are explained by the deficient diet prevalent in the South, consisting of meat (salt pork), meal and molasses There are many subclinical cases in the endemic areas of the poorer southern states, and pellagrins constitute a large percentage of the inmates of southern psychiatric hospitals Favorable reports of the treatment with nicotinic acid have been well substantiated.

Water soluble vitamin C was crystallized in 1928 as hexuronic acid This compound was later called *l*-ascorbic acid and is now officially named cevitamic acid This vitamin, the presence of which in citrus fruits was relied on empirically for years by English sailors, is the antiscorbutic factor Its importance now lies largely in the danger of deficiency in artificially fed infants Dr Barker emphasized the newer concept that Barlow s disease, or infantile scurvy, is essentially similar to the disease process in the adult except for the different manifestations brought about by growth The disease affects the bones in infants but never in adults Diagnosis in doubtful cases is possible by the tourniquet test or, more recently, by the determination of the level of the plasma cevitamic acid

The second fat-soluble substance, vitamin D is the ulator of calcium metabolism, and is gradually being ided into a number of substances. At present, there at least ten known forms, only two of which are ctually important. One, of vegetable origin is activated osterol in its pure form known as calciferol and ned viosterol officially the other is activated 7-dihydro-olesterol of animal origin which develops in the skin der the action of ultraviolet rays. Certain of the other ms of vitamin D although capable of raising the blood cium in rickets are not efficacious in its treatment. The mmonest disease brought on by lack of this vital food tor is rickets in the growing child This may be e to improper food, lack of sunlight or poor absorptive wers. If rickets is present, 1200 units per day should administered, but serum-calcium determinations should carried out twice weekly and medication stopped if e level reaches 12 mg per 100 cc. Osteomalacia in the ult is essentially adult rickets, but is relatively rare cept in war ridden countries.

Vitamin E is an alcoholic compound which has been oved to be important as an antidote for habitual abor n in cattle, but whose necessity for human fertility is ll an open question.

Vitamin K is a fat-soluble thermostable compound ich now appears to be a constituent of prothrombin. le salts are a necessity for its absorption from the gas-ntestinal tract, so that they should be administered ong with the vitamin in cases where there is any ques-n of biliary obstruction Adequate increases of the othrombin level of the blood have been constantly monstrated by the use of this vitamin alone or in mbination with bile salts when necessary

Vitamin P which is now identified as citrine, has been oved to be useful in the treatment of certain cases of rpura that have been resistant to vitamin C therapy

Several other vitamins were enumerated by Dr Barker being of some use in various species of animals but t for man.

In conclusion, Dr Barker deplored the overexploita on of the vitamins and their indiscriminate thera-utic use without proper preliminary studies and drag oses. Further detrimental facts in the present situation e the extravagant claims of commercial companies in re ard to the vitamin content of their products and their dulave merits. This leads to ill-advised self treatment y people who probably have no vitamin deficiency The ormal adult on a suitable diet is in no danger of avi minosis. There is but little danger from such treat ent with vitamins, for only excess of vitamin D results any dangerous condition as a result of hypervitamino-s. There are certain extraordinary conditions, such as regnancy however in which even the adult needs addi-onal vitamin factors. On the other hand restrictions f diet (as in peptic ulcer) should not be allowed to include he vitamins which should be administered parenterally any instance where the oral route is inadvisable or mpossible. Finally it is to be hoped that with the increas-ng number of vitamins chemically identified, specific ames will be universally applied.

NOTICES

TUMOR CLINIC, BOSTON DISPENSARY

Each Tuesday and Friday morning 10-00 to 12.30 there is a meeting of the Tumor Clinic of the Boston Dispensary a unit of the New England Medical Center Neoplasms of various sorts are seen and discussed and, when there is an indication, are treated with radium of high voltage x ray Physicians are invited to visit this clinic. They may bring patients for aid in diagnosis or may refer patients to the clinic following which a report will be returned to the referring physician. A limited number of beds are available for diagnostic study and for treatment.

SOCIETY MEETINGS AND CONFERENCES

CALENDAR OF BOSTON DISTRICT FOR THE WEEK BEGINNING MONDAY AUGUST 7

THURSDAY AUGUST 8
10 a m.–12.30 p m Boston Dispensary tumor clinic.

FRIDAY AUGUST 11
10 a m.–12.30 p m. Boston Dispensary tumor clinic.

SATURDAY AUGUST 12
10 a m.–12 m. Staff rounds of the Peter Bent Brigham Hospital. Conducted by Dr Robert T Monroe

Open to the medical profession

AUGUST 30–SEPTEMBER 2 — Seventh International Physical Therapy Congress Page 857 issue of May 18.

SEPTEMBER — Boston Psychoanalytic Institute Page 450 issue of September 22, 1938.

SEPTEMBER 4–6 — Institute for the Consideration of the Blood and Blood Forming Organs. Page 941 issue of June 1

SEPTEMBER 4–6 — Institute University of Wisconsin Medical School Page 160 issue of July 27

SEPTEMBER 5–8 — American Congress of Physical Therapy Page 857 issue of May 18

SEPTEMBER 11–15 — American Congress on Obstetrics and Gynecology Page 938 issue of December 8

SEPTEMBER 14–16 — Biological Photographic Association. Page 941 issue of June 1

SEPTEMBER 15–28 — Pan-Pacific Surgical Association Page 863 issue of November 24

OCTOBER 23–NOVEMBER 3 — New York Academy of Medicine. Page 977 issue of June 8.

FALL, 1939 — Temperature Symposium. Page 218 issue of February 2.

DECEMBER 1–2 — American Board of Obstetrics and Gynecology Page 1019 issue of June 15

JUNE 6, 1939–1940 — American Board of Obstetrics and Gynecology Page 160, issue of July 27

MARCH 2–9 1940 — The New England Hospital Association Hotel Statler Boston

MAY 14 1940 — Pan-American Congress Convention. Page 894 issue of May 25

JUNE –9 1940 — American Board of Obstetrics and Gynecology Page 1019 issue of June 15

BOOKS RECEIVED FOR REVIEW

Headache and Head Pains A ready reference manual for physicians Walton F Dutton. 301 pp Philadelphia F A Davis Co., 1939 $4.50

Proctology for the General Practitioner Frederick C. Smith. 386 pp Philadelphia F A. Davis Co., 1939 $4.50

Diseases of the Mouth and Their Treatment A text book for practitioners and students of medicine and dentistry Hermann Prinz and Sigmund S. Greenbaum. Second edition. 670 pp Philadelphia Lea & Febiger 1939 $9 00.

Cancer of the Colon and Rectum Its diagnosis and treatment Fred W Rankin and A. Stephens Graham 358 pp. Springfield Illinois, and Baltimore Charles C Thomas, 1939 $5 50

Le Temps de Reaction Techniques applications cliniques Paul Michon. 98 pp. Paris Masson et Cie 1939 72 Fr fr

Traitement de la Blennorragie par le Sulfamide une Sulfone et Leurs Dérivés M. Palazzoli and F Nitti. 195 pp. Paris Masson et Cie, 1939 35 Fr fr

Les Embolies Cérébrales Études de pathologie expérimentale sur les embolies solide et gazeuse du cerveau

Maurice Villaret and Rene Cachera 133 pp Paris Masson et Cie, 1939 32 Fr fr

Fever Therapy Technique Jack R Ewalt, Ernest H Parsons, Stafford L Warren and Stafford L Osborne. 161 pp New York and London Paul B Hoeber, Inc, 1939 $2.50

A Source Book in Geology Kirtley F Mather and Shirley L. Mason 702 pp New York and London McGraw-Hill Book Co, Inc, 1939 $5 00

Roentgen Technique Clyde McNeill 315 pp Springfield, Illinois, and Baltimore Charles C Thomas, 1939 $5 00

BOOK REVIEWS

The Massachusetts General Hospital Its development, 1900–1935 Frederic A Washburn 643 pp Boston Houghton Mifflin Co, 1939 $4 00

At the breakfast table one morning, the professor remarked that after a man begins to attack the State House, when he gets bitter about the Frog-Pond,—and he might have added, when he thinks he can turn up his nose at the Massachusetts General Hospital,—you may be sure there is not much left of him Because, as every Boston Brahmin agrees, no matter what happens the State House will always have its cupola fresh gilded, the Frog Pond its fountain that glorifies that humble sheet with a fine display of provincial rainbows, and the Massachusetts General Hospital will go serenely about its business of giving ever better care to the sick, fighting against the cause of disease and pain, and training doctors and nurses

If one merely is interested in a historical document dealing with the recent development of a first-class, modern hospital, one will read Dr Washburn's book enjoyably The author has meticulously traced the career of the Massachusetts General Hospital from 1900 to 1935, from the days when it was a small hospital of 260 beds, with an outpatient department having an average daily attendance of only 298 patients, and when its annual expense was a paltry $204,896, up to the time when there were 765 beds, when the outpatient department cared for 988 patients a day and when the annual expense of the institution was $2,176,477

If one happens to admire the Massachusetts General Hospital, and particularly if one happens ever to have belonged to it in any capacity, he will wish to own this book, to study it, to add it to his pictures of the hospital and to all the other things he has collected that go to remind him so often of what brave days those were when he was a house pupil

Not a great many years ago, Harvey Cushing gave an Ether Day address there. He called it, "The Personality of a Hospital," and he showed how vitally alive a good hospital must be. He ended by saying that every hospital recognizes more or less clearly certain set obligations What help or hinder most in their fulfillment are the crystallized traditions which give an institution its particular individuality In the development of this quality, countless people contribute—those whose charity has given comfort and peace of mind, as well as those whose professional skill has brought physical well being to the maimed and sick those who have brought the greatest sympathy and understanding to the problems of the young people there to learn, those who may never have come in special contact either with patients or students but who have applied themselves to the forwarding of knowledge, those who have managed the business affairs of the hospital, those, too, who have made the beds, kep books, answered the telephone, cooked the food, don wash, stoked the fires and scrubbed the floors

Dr Washburn gives all these countless people full for their share in making the personality of the Mass setts General Hospital what it is today He has pain fine portrait of a respected New England hospital, pl ing ahead fearlessly, living up to worthwhile trad and continuously meeting the future so that as the f has become the present or faded into the past, the acter of the institution has never grown old but h mained perpetually young and ardent.

End Results in the Treatment of Gastric Cancer analytical study and statistical survey of sixty ye surgical treatment Edward M Livingston George T Pack 179 pp New York and Lo Paul B Hoeber, Inc, 1939 $3 00

In the introduction to this outstanding book, man Crowell states that it constitutes a third milepc the road of therapy of gastric cancer, the first two the establishment of resection by Billroth and W classical paper on the natural history of the disease meticulous care every report in the literature of t sults of surgical treatment of gastric carcinoma has reviewed and analyzed This constitutes about gastrectomies The book crystallizes the present sta treatment of this disease, which, as the authors v point out, claims almost three times as many v every year in this country as the number killed durir World War

There are about 60 pages of discussion and 95 pa tables and graphs Both sections contain accurately ated data that cannot be adequately discussed ir review However, certain of the authors' concl stand a of unusual importance For example, show nd any question of doubt that gastric can repr ed by two different types of disease the wh iscovered is beyond hope of cure by any m and the second can be successfully treated by gastr section In this second group those patients wh treated in well-organized institutions stand a one t chance of ten year survival, while those who are att by 'casual' surgeons have a much poorer prognosis emphasize that every patient that does not have ob metastases should be operated on and that the more tions, the greater the number of cures The note thr out is one of optimism, and the steady improveme treatment since the time of Billroth is well brough Gastroenterostomy is condemned as offering little or ing to the patient and carrying a mortality at le great as resection itself

The suggestion that a community or hospital 'r —the ratio of the number of gastrectomies to the nu of cases seen—be established is interesting It this is the number of cures is also low, and presumably the ment, medical or surgical, in that community is cient. As the authors show, there are so-called "c clinics in which no successful resections have beer formed for many years A minimum standard for su index would be a worthwhile addition to the re ments for approval of a hospital by the American C of Surgeons

The book should be studied not only by every su but by every physician who comes in contact with common and tragic disease, because it is clearly s that the key to successful treatment is the local phy who carries out early diagnostic measures

ina Pectoris Nerve pathways physiology symptomatology and treatment Heyman R. Miller 275 pp. Baltimore The Williams & Wilkins Co., 1939 $3.25

ie author states that this volume grew out of an orig desire to present a series of carefully drawn anatomi harts of the cardiac innervation. The text was de ed later to explain the illustrations. It is divided four main sections. The first section covers the con and clinical features of angina pectoris the second ses the anatomic pathways for the transmission of oracic pain the third covers the distribution and lation of anginal pain and the treatment of angina cts and the final section discusses the physiology and iology of pain The drawings themselves, are tech y very good but it seems to this reviewer that there oo many of them and that a few larger drawings d have served the purpose better The general scheme its of a series of progressively more complicated il tions of the nervous pathways involved in cardio- pain, and the drawings are of necessity very de . In the main they appear to be accurate, but in of their complexity they are intentionally schematic therefore, are of little value for a practical surgical ach to the problem. Furthermore, the importance direct thoracic cardiac nerve which plays so large in the surgical treatment of cardiac pain is not ently emphasized.

text contains a useful survey of the literature and interesting points for those particularly interested in vascular problems. The discussion of treatment has extended to include congestive heart failure, and is a large amount of space given over to drug y A few unfortunate errors have crept in such recommendation for administering 0.1 gm. of dry lis leaf per pound of body weight in treating ysmal auricular fibrillation a dose which is ten larger than was intended. The author considers ngina pectoris represents a powerful disturbance of ure autonomic nervous system and discusses in detail atures which are expressions of the activity of the thetic and vagal systems. There is a good review conditions which simulate angina pectoris, but the eration of the clinical features of angina pectoris on coronary disease does not differentiate clearly h the syndrome of the simple anginal attack and f acute cardiac infarction. He considers that the teristic features of an attack of angina pectoris are of inordinate magnitude, marked psychic disturbdifficult to describe and shock." While this is true diac infarction, it is certainly not true of the vast ty of attacks of angina pectoris of the milder type the physician should learn to recognize long be hey have reached the stage of extensive acute cor closure.

book appears to be rather too confusing for stu- helpful for a man in general practice who wishes derstand the anatomy of the nervous pathways, and to a specialist mainly from its bibliographical al.

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e of the Circulation Tinsley R. Harrison. 502 pp altimore The Williams & Wilkins Co., 1939 $4.50

rison presents a second edition of his important book lure of the circulation having added comprehensive sions of cardiac syncope and cardiac collapse and the chapters on angina pectoris from the last part book to the first major section which deals with d failure.

The author's chief contributions still concern congestive heart failure, the differentiation of peripheral circulatory failure and cardiac failure and in Section III the simultaneous occurrence of forward and backward failure. They are presented in detail in clear and interesting writing, valuable alike for the investigator and practitioner One might question however the inclusion of angina pectoris sudden death and general circulatory disturbances without failure in a book of this sort.

In the preface of this edition the author writes 'Speaking broadly and granting certain notable exceptions we have, as yet, relatively few useful methods of treating successfully the causes of heart disease. What we treat, and this can be done with more than a fair degree of success is their results, which are certain disturbances of function. Regardless of etiology each of these major syndromes has certain definite prognostic and therapeutic implications." In this way he returns largely to the viewpoint of Mackenzie concerning the great significance of functional disorders of the circulation. The reviewer believes, however that we should not overlook the fact that it is of great, perhaps greater, importance for the doctor to recognize the presence of heart disease or heart strain early and so to advise as to aid in the postponement or even in the prevention of myocardial or coronary failure. Such preventive medicine by the physician at large can be definitely practiced if he will go about it, even though there is a great deal still to learn concerning the causes of heart disease too often all the doctor does is to wait for the end results in the form of failure, before he acts.

For the analysis, recognition and treatment of peripheral circulatory failure and of the end results of heart disease this volume can be heartily recommended.

Whence? Whither? Why? A new philosophy based on the physical sciences Augusta Gaskell 312 pp. New York G P Putnam's Sons 1939 $2.50

Man goes through many soul-searching experiences. As a result, sooner or later he feels impelled to come to grips with the great questions What is life? What is God? What is death? The introduction, written by Professor F K. Richtmyer professor of physics at Cornell University and dean of the Graduate School gives an indication of the author's well-earned right to consider this large field by stating with respect to the physical sciences, that "Mrs. Gaskell's manuscript shows that she possesses a broad and correct grasp of the essential facts and theories requisite for her purpose."

The following excerpts illustrate the point of view of the author "For if [as theory says] the organism is a dual system, and life, or the Z-system is an intra-atomic quantity then the cessation of the activities of the system [the death of the organism] must mean the expulsion or separation of the quantity life, since the elementary units which [In peculiar organization] constitute the Z-system, life, cannot be disposed of in any other way." Again "If we accept Dr Loeb's method of interpreting conduct in terms of tropisms as valid and we may do so provisionally and apply it to the interpretation of religion [i.e., of the religious sense] we must then define religion this disunguishing characteristic of man as theotropism" Still further 'Man is not only a metamorphic organism, he is in an abnormal state. No other conclusion is possible than the conclusion that the earth's organic evolution is a marred one, and that man has had a fall "

One who reads this book carefully will find ample room for agreement for critical discussion and for total disagreement with many thoughts expressed by the author

The value of the book, however, will always be the sincerity and the singleness of purpose with which the author approached her subject.

Secretarial Efficiency Frances A Faunce. With the collaboration of Frederick G Nichols First edition. 601 pp New York Whittlesey House, 1939 $3 50

This is a book a doctor would like to have his secretary read, and indeed, a doctor would pick up many points of good management from it. To be sure it is not a book written just for the secretaries of doctors, but it does contain specific, appropriate and understanding advice for such secretaries and is therefore worth while The reviewer is happy to recommend it.

The authors foresee what a doctor wants They develop the need for a doctor's secretary to be interested in patients and to be willing to help in the chaperoning of patients, in caring for them in the office and in readjusting appointments to meet both the needs of the physician and the patient. In many places in the book the thesis is driven home that to work for a doctor demands more than the qualification of a simple stenographer, there must be an interest in the job, accuracy and a 'heart."

Clinical Biochemistry Abraham Cantarow and Max Trumper Second edition, revised 666 pp Philadelphia and London W B Saunders Co, 1939 $6 00

In the second edition of this well known work, according to the authors statement in the preface, practically every chapter that deals with the following subjects has been revised influence of the anterior hypophysis, adrenal cortex and vitamin B_1 on carbohydrate metabolism, serum phosphatase activity, uremia, water balance, edema and dehydration, iodine metabolism, sodium and potassium metabolism, iron metabolism, magnesium metabolism, chemistry of bile, practical biochemical aspects of vitamin deficiency In general, the method of presentation adopted in the first edition has been adhered to, with the exception of the inclusion of a selected bibliography of critical reviews and some source material

A volume such as this, which has, no doubt, had an extensive sale in its first edition, hardly needs a review There is some repetition, but on the whole the information given is easily available. The printing is clear, there are but few mistakes, and the subjects are well indexed

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Fever and Psychoses A study of the literature and current opinion on the effects of fever on certain psychoses and epilepsy Gladys C Terry 167 pp New York and London Paul B Hoeber, Inc, 1939 $3 00

It has been well known for many years that fever treatment is effective in the treatment of general paresis A similar type of treatment which might affect other psychoses has long been in the minds of many psychiatrists The reports have been scattered in the literature, and we are indebted to the author of this monograph for bringing the literature together in compact form, in spite of the fact that the book lacks any report of personal experiences The author, moreover, fails to evaluate the literature in a chapter which might summarize the whole review Although the facts are presented, there is little or no attempt to interpret them. The book would have been of more value had the author written in collaboration with one of the senior neurologists of the Neurological Institute of New York, where the work originated The book, moreover, lacks an index

Clinical Obstetrics A Lakshmanaswami Mudaliar 819 pp Edinburgh and London Oliver & Boyd, 1938 27s

This volume by the professor of obstetrics at the Madras Medical College in India covers in very satisfactory form the usual subjects in a book on obstetrics It has, of course, the English point of view and the English treatment of the various conditions and complications of pregnancy We here in America do not subscribe to all that is included in the text. However, the advice and treatment given are for the most part sound, and do not diverge too greatly from American teachings The chapter on tropical diseases is interesting and is of increasing importance. The material given in the chapters on operative obstetrics does not correspond to the best approved technic in America at the present time.

The book is well illustrated and well printed. It will prove valuable as a book of reference showing foreign methods of procedure.

Hypertension and Nephritis Arthur M Fishberg Fourth edition, thoroughly revised. 779 pp Philadelphia Lea & Febiger, 1939 $7 50

Five years have passed since the publication of the third edition of this book. The present edition brings the text as nearly up to date as could be desired, and will maintain its reputation as the best interpretive summary of the literature of nephritis and hypertension in English The disinclination of the author to ride his own hobbies to the exclusion of other men's is, to the special student of the subject, a most admirable virtue If while maintaining his impartial comprehensiveness, he devoted more attention to a simple and thorough exposition of the relatively few diagnostic and therapeutic procedures which he finds of practical value, his book would be more useful to the practitioner

It continues to be a cause for admiration on the part of the reviewer that since the early monograph of Robert Christison a hundred years ago, it has regularly been possible for men in every generation to write really good books of eight hundred pages on a subject we know so little about as hypertension and nephritis

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Classified and Annotated Bibliography of Sir William Osler's Publications Edited by Maude E Abbott. Second edition, revised and indexed 163 pp Montreal The Medical Museum, McGill University, 1939 $2 25

This revised bibliography is welcome. The first issue was begun in 1920 and published in 1926 The new issue adds an index and contains some minor corrections. It has become the standard bibliography, noted for its completeness and accuracy Unfortunately, it has not been possible to incorporate the addenda into the text, and a section on 'Writings about Osler," in the 1926 issue, has been omitted It is hoped that the industrious compiler of this book will now set to work to complete this missing section She, above all others, could do it best. In the meantime, we give thanks for this revised edition of the bibliography and extend our congratulations and best wishes to the devoted Osler disciple, Maude E Abbott. Dr Jacobs, Osler's contemporary in Baltimore, has written a graceful foreword, giving the history of the Vernon plaque of Sir William Osler

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THE EPILEPSIES WITH A NOTE ON RADICAL THERAPY*

WILDER PENFIELD, M.D †

MONTREAL

FORTY-SIX years ago the Shattuck Lecture was delivered to this society by my former teacher, r William Osler Some time later he wrote a te which has been placed by Dr Francis in the bliotheca Osleriana The note was as follows t the Shattuck Lecture—while the President as anointing the orator—looking over the 1200 en in the big Mechanics Hall I received a defi te impression that never before had I seen so rge a collection of doctors with faces indicat g breeding and pasture" High praise these ords, written with no possible taint of intended ttery Osler has trod his measure, as have your edecessors of two generations past But no doubt would say the same today if he were here, as wish he were, for New England s pastures are ll green with finest fodder I refer to the stures of mind and soul as well as of body

The acceptance of the honor of giving the Shat ck Lecture carries with it, it seems, certain nbarrassing responsibilities first to submit a anuscript worthy of publication in the *New Eng nd Journal of Medicine* and second to make the esentation to a form which may be palatable to actitioners of every hue of medical interest (if ch a thing is possible) These considerations ve led me to rewrite the address since the title as submitted In the process of doing so the eatment of epilepsy due to lesions of birth and fancy has now been made secondary to a pre minary consideration of the classification and udy of all the epilepsies

DEFINITION

From a physiological point of view, epilepsy may defined as a tendency to periodic involuntary uronal explosions. For the patient, on the other nd, it is a state of continuing dread (usually ared by his friends and family), interrupted by recurring attacks of involuntary behavior Hugh lings Jackson pointed out that there is during each attack a "local discharge of gray matter" Whatever the type of case may be, it is best for practical purposes to consider that all seizures be gin locally in the central nervous system

The primary problem is to determine the location of the initial neuronal explosion which is indicated by the pattern of the fit The secondary task is to discover, if possible, the nature of the irritating cause. The physician must therefore have two standards of classification, first according to the clinical type of fit, and second according to cause He must answer two questions Where is the focus? What is the cause?

CLINICAL CLASSIFICATION

A sane and useful classification of epilepsy is that described by Cobb[1] (Table 1) He has listed a number of clinical varieties, subdivisions which are obvious and simple and hoary with age These patterns and types of attack depend on the location of the discharge within the brain I should like therefore to modify such an outline adding to it so far as possible the anatomical imputa

TABLE 1 *Types of Clinical Seizures (Cobb[1])*

Dizziness (or aura)
Lapse (petit mal)
Lapse with oculomotor spasm
Lapse with neck spasm
Lapse with falling
Lapse with wetting
Inhibition (catalepsy)
Vasovagal and a tonomic fits
Sensory fit (or aura)
Sensory fit with smacking and swallowing
Déjà vue ad dream states
Confusion
Rages, fugues and ecstasies
Automatic, stereotyped locomotor attacks
Epilepsia procursiva
Epilepsia procursiva
Co-ordinated epilepsy (Rosett)
Convulsion (clonic jerks) (grand mal)
Convulsion (postural spasm)
Myoclonus (regional)
Epilepsia partialis continua
Jacksonian fit

* The Shattuck Lecture, delivered at the annual meeting of the Massachusetts Medical Society Worcester June 6, 1939

† Director Montreal Neurological Institute professor of neurology and neurosurgery McGill University Faculty of Medicine Montreal.

tions associated with each group as in Table 2 The different clinical patterns of seizure from which this classification is made usually remain surprisingly constant for any given case

The use of electroencephalography has caused Gibbs, Gibbs and Lennox[2] to approach the classification of epileptics from an entirely different point of view As you know, when electrodes are placed on a patient's scalp electrograms analogous to electrocardiograms may be made of the "brain waves" During a seizure the normal cerebral rhythm is interrupted by an electrical disturbance which originates in that part of the brain where the epileptic discharge begins These authors would rename epilepsy "paroxysmal cerebral dysrhythmia" And they further suggest three subdivisions, grand mal, petit mal and psychomotor, according to the form of electrical wave and its frequency

TABLE 2 *Epilepsy Clinical and anatomical classification*

CLINICAL TYPE	LOCALIZATION
Lapse (simple loss of consciousness petit mal)	
Psychomotor (rages fugues confusions)	
Automatic behavior and confusion (postseizure release)	
Generalized motor	Motor and associated systems
Focal motor (Jacksonian)	Pre Rolandic
Sensory (somatic)	Post Rolandic
Visual (lights darkness)	Occipital
Auditory (buzzing)	Temporal
Rotatory (dizziness)	Temporal
Gustatory (smacking swallowing salivation)	Lower Rolandic
Olfactory (uncinate fit)	Infratemporal
Perceptual (*deja vue* unreal near, remote)	Temporal
Dream states (elaborate)	Temporoparietal
Autonomic (vasovagal and so forth)	Diencephalic
Opisthotonic (cerebellar)	Mesencephalic
Myoclonic (muscle jerks)	Bulbospinal

For a practical classification, grand mal may be discarded Whether the other two types of tracing indicate essentially different kinds of fits, or whether the difference in the curves is derived from the peculiarity of that part of the brain in which each arises, must be settled at a later time For true petit mal and psychomotor attacks no localization is proposed in this classification

Seizure Pattern

Lapse From a clinical point of view the essential feature of petit mal is primary loss of consciousness without immediately succeeding convulsion In my opinion this loss of consciousness must result from a discharge in the highest level of neural integration, which is situated not in the frontoparietal cortex but probably in a zone nearer the base of the brain and brain stem It seems to me quite possible that the petit mal dysrhythmia is only the wave form which results from epileptic discharge in that area of the brain, and is not otherwise an indication of a different form of epilepsy Petit mal attacks, like the other types, may change gradually into those of grand mal Brief attacks of another sort, especially if they arise in the temporal lobe, may easily be mistaken for true petit mal.

Psychomotor Psychomotor seizures are disturbances of consciousness (or mental disturbances) which accompany epileptic discharges in neurone circuits not yet identified, but which may also be related to the highest level of neural integration The attacks may be quite short or may be subclinical

Automatic behavior and confusion Post-seizure automatic behavior and confusion probably result from the actual paralysis that follows a seizure It must be located in this same high level of neural integration Thus the lower centers are intact and the patient can walk about and carry out complicated acts, such as mixing up the ingredients for cocoa in the garbage can or striking a friend, but conscious direction is absent The seizure may have been severe or mild When no seizure is observed it may be an open question whether or not a psychomotor seizure is in progress, producing a so-called psychic variant

It is true that petit mal, as well as psychomotor seizures, is rarely produced by objective focal lesions They have never been reproduced by electrical stimulation, and they are in general not susceptible to surgical therapy

We may now turn to the other and less mysterious types of epileptic seizure the anatomical substratum of which we know or can surmise It must be admitted that some of the localizations are tentative The pattern of each attack must be carefully determined by questioning the patient and family, and often by the direct observation of specially trained nurses in the hospital Seizures may often be produced by withdrawal of medication for a few days Hyperpnea lasting for ten minutes produces temporary alkalosis and often precipitates a typical attack If necessary the patient may be put on a hydration regime, first described by McQuarrie and Peeler[3] in 1931 and modified by Keith[4] Fluids are forced, and 0.5 cc of pitressin is given hypodermatically every two hours for one or two days until an attack occurs or until signs develop that make discontinuance advisable, for example abdominal cramps, headache and vomiting

In general, attacks that begin with the turning of the head or eyes to the right have been initiated in the left hemisphere, and vice versa Only very occasionally is this rule reversed If an aura is the first evidence of an attack the focus is usually behind the central fissure of Rolando If an attack begins with initial loss of consciousness it is usually initiated anterior to the Rolandic gyri

Generalized motor The first type of seizure is the generalized one all too familiar to every physician, characterized by generalized tonic-clonic contraction of the muscles of all extremities and trunk, and sometimes by frothing at the mouth and tongue-biting In such attacks a discharge of nerve cells is taking place in the pyramidal and extrapyramidal motor systems of cortex and basal ganglia in both hemispheres, and evidently also in the diencephalon, if not lower in the brain stem, for there is frequently loss of sphincter control and marked disturbance of respiration, as well as invariable loss of consciousness This generalized

right side up Between brow and mouth areas comes that of vocalization, a high-pitched continuing cry (not words) Below the mouth area and near the fissure of Sylvius is that of the tongue and then those of swallowing, salivation, chewing

Sensory A postcentral focus may produce a sensation of tingling, numbness, movement or desire to move in a similar contralateral part This may spread across the central fissure to produce clonic movement of the same part, or there may be simple postcentral spread resulting in a sensory march through the sensory body representation In general the sensory map

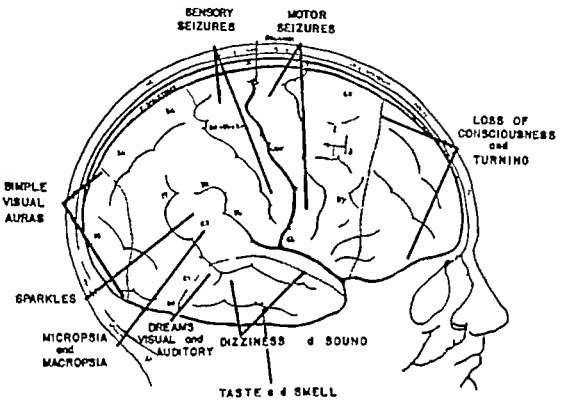


FIGURE 1

Chart of common initial phenomena in epileptic seizures arising in different areas of the brain (Penfield and McEachern[34]) Reproduced by courtesy of the Oxford University Press.

it may develop as the sequel of one of the other types of seizure, for the motor and associated systems seem to be the final common path for discharges of great intensity anywhere in the brain But each of the other types may occur by itself without spread, and it seems likely that a so-called generalized seizure may occur without involving all parts of the brain such as the frontal, occipital and temporal regions

Jacksonian This type of seizure has been well known since Hughlings Jackson described the typical march of movement, for example from face to fingers, hand, arm and leg Somatic movement is represented as though on a map in the precentral gyrus (Penfield and Boldrey[6]) In general the body is upside down with the area controlling the foot at the longitudinal fissure and that of the and below that of the arm with the thumb area lowermost The head area is below, but it is

correspoods with the motor map which lies anterior to it.

Visual A simple visual hallucination seen either in front or at the opposite side, points to the occipital pole. Sparkling lights like electric light advertisements arise a little more anteriorly at the junction of occipital and parietal lobes

Auditory Sound as an aura is usually buzzing or rumbling The discharge is localized in the temporal lobe and is apt to be referred to the opposite side of the head or opposite ear There may be no reference, however, to either side

Rotatory A sense of rotation or true unsteadiness also results from discharge in the temporal lobe, and is apt to be associated with an auditory aura as well

Gustatory Attacks which begin with smacking swallowing and salivation may not be remem

bered by the patient as associated with any sense of taste It is a pantomime of tasting, but the actual sensation is forgotten or never existed The discharge is occurring in the lower Rolandic gyrus just above the fissure of Sylvius

Olfactory A sense of smell which is practically always disagreeable indicates discharge in the vicinity of the uncus and the seizure is therefore called an uncinate fit At any rate the focus is to be expected in a zone beneath the temporal lobe of either side

Perceptual Alteration in the interpretation of things seen or heard is a fairly frequent aura Things may suddenly look large (macropsia) and seem near, or they may look small (micropsia) and seem far away The latter may give the feeling of remoteness The patient may perceive things, but they may suddenly seem unreal Things heard may seem inexplicably loud Another frequent aura is a sudden feeling of familiarity with the present surroundings, the patient thinking he has been there before (*déja vue*) All these alterations in perception, whether visual or auditory, have seemed to me to be produced by discharge in the temporal lobe.

Dream states Elaborate dreams and visions, usually recurring in identical form, also memories of complicated scenes or situations, result from discharge in the posterior temporal lobe, including adjacent parts of the parietal and perhaps occipital lobes

Autonomic A whole train of autonomic phenomena, such as alterations in heart rate and blood pressure, sweating, piloerection, pupillary change, and so forth, may occur as the result of discharge in the diencephalon without somatic alteration Or these phenomena may precede a generalized seizure They originate in the diencephalon adjacent to the third ventricle. After having stimulated electrically the cerebral cortex of hundreds of conscious patients I have found little evidence of autonomic representation in the cerebral cortex, as would be expected from the experimental conclusions of Fulton [6] It seems possible that autonomic phenomena may result from discharge in the midbrain and the medulla oblongata, but of this I am not certain

Opisthotonic The so-called cerebellar fits of Hughlings Jackson do not result from discharge in the cerebellar hemispheres but from discharge in the adjacent nuclei of the midbrain A frequent cause of such attacks is posterior fossa tumor, which is apt to be found infiltrating the brain stem Severe head injury which produces a decerebrate state may also produce recurring attacks of rigidity, which probably belong in the same category Tonic fit also describes these attacks of truncal spasm

Myoclonic Jerks of individual muscles or isolated muscle groups result from discharge in the medulla oblongata and the spinal cord

LOCALIZING PROCEDURES

Other methods of localization must be employed-neurological examination, pneumography, electrography or electrical stimulation of the exposed brain

Details of neurological examination need not be stressed here Smallness of one extremity or one side of the face or trunk, if it means a cortical lesion at all, indicates a definite lesion of the corresponding area of the opposite postcentral gyrus which has occurred within the first year or two of life.

Pneumographic encephalography is an important procedure An expanding lesion displaces the ventricles from the focus and tends to cause dilatation of the opposite ventricle Non-neoplastic lesions usually cause enlargement of the nearest portion of the ventricle out toward the lesion. Large meningocerebral cicatrices may result in migration toward the site of injury not only of the adjacent lateral ventricle but also of the septum pellucidum and the third ventricle

Electroencephalography is of great value in localization of epileptic foci If an attack occurs during examination the dysrhythmia begins first at the site of the focus and spreads to other parts If no attack occurs, random delta (slow) waves may be found over an area of cerebral injury In the vicinity of isolated epileptogenic foci there may occur spike-shaped waves

ETIOLOGIC CLASSIFICATION

It is further necessary to classify cases according to cause At present they must be divided into two main groups functional, that is without an objective cerebral lesion, and organic, that is with an objective cerebral lesion (Table 3)

TABLE 3 *The Epilepsies Etiologic classification*

TYPE	CAUSE
FUNCTIONAL GROUP	
Idiopathic (genuine)	Abnormal cerebral physiology
Toxic and febrile	Extracerebral origin
Hypoglycemic	Extracerebral origin
Miscellaneous (angioneurotic circulatory arrest and so forth)	
ORGANIC GROUP	
Neoplastic*	Extracerebral or intracerebral tumors
Cicatricial*	Sequel of trauma, abscess and so forth
Focal microgyria*	Ischemia and compression at birth
Atrophic focal*	Compression infection vessel closure
Brain cyst*	Occlusion of large vessel
Hemorrhagic cyst*	Non fatal cerebral hemorrhage
Degenerative	Progressive brain disease
Congenital	Developmental cerebral abnormality
Diffuse vascular	Arteriosclerotic syphilitic, and so forth
Miscellaneous	Various cerebral abnormalities

*Susceptible to surgical attack.

In functional cases no objective abnormality of the central nervous system can be demonstrated by present-day methods The cause may be considered physiologic rather than pathologic. In these cases the condition almost always makes its first appearance in the early teens If the attacks begin in childhood some cerebral cause can usually be demonstrated, the term idiopathic" must be used until further advance in circulatory or metabolic physiology defines their cause The fact that the pattern of attack in most idiopathic cases remains constant for years suggests that the cause must be in the brain itself, at least in part, and not in some pathologic metabolic alteration at a distance.

The examples of seizures of toxic and febrile origin must sometimes be due to the effect on a normal brain of a convulsant element in the blood stream, as in certain toxemias But sometimes this is not the case A brain which has a lesion may give rise to no seizures until the patient has a general illness, whereupon seizures appear Moreover, in the febrile illnesses of children convulsions may be a sign of cerebral thrombosis secondary to extreme dehydration and blood thickening Years later chronic epilepsy may appear as the result of such a vascular insult

Hypoglycemia like the toxemia of pregnancy, is an excellent example of extracerebral cause Obviously treatment is then to be directed toward the cause, and in cases in which attacks appear after a fast, studies should be made of the blood sugar

In the organic group there are as many different subdivisions as there are lesions and varieties of conditions that may affect the brain The epilepsies, which they must be called are alike only in the outward manifestation of recurring seizures. These seizures are an evidence of abnormality of the brain, just as recurrent spasms of coughing are an evidence of one among many possible diseases of the lung It is the cause of the fit, like the cause of the cough, that forms the primary clinical problem

There is one other useful means of classification of the epilepsies (Table 4) The age at onset provides a tentative initial classification Seizures in infancy suggest early brain injury Onset of seizures about the age of puberty without antecedent history of head injury suggests idiopathic epilepsy Attacks which begin after the age of twenty suggest the possibility of a brain tumor, brain scar or cerebral vascular lesion The case of the adult who develops recurring seizures with no history of severe head injury should be diagnosed as brain tumor until proved otherwise. These distinctions are not hard and fast For example, epilepsy due to birth injury may also occasionally begin at puberty, and tumors of the hemispheres may occur in children

TABLE 4 *The Epilepsies Presumptive classification according to age at onset*

AGE AT ONSET	PRESUMPTIVE CAUSE
0–2	Birth injury degeneration congenital
2–10	Birth injury febrile thrombosis, trauma
10–20	Idiopathic trauma
20–30	Trauma neoplasm
30–50	Neoplasm trauma
50–70	Vascular neoplasm

RADICAL THERAPY

Classifications of disease are useful if they serve as a guide to intelligent therapy It is not my intention to attempt to describe conservative therapy or to minimize its importance. Any patient suffering from epilepsy must be given a careful general medical examination Hypoglycemia and toxic states must be ruled out, and in general any remediable abnormality must be corrected All such patients must be warned against constipation, alcohol and fatigue Phenobarbital bromides, Mebaral or Dilantin must be used symptomatically and a ketogenic diet may be tried in children Dehydration in my experience is of very little use. Direct surgical attack is possible in certain of the organic epilepsies, as indicated in Table 3

Cerebral neoplasm It is unnecessary to discuss the surgery of brain tumors in Massachusetts, where I for one received my neoplastic baptism, however brief in the clinic of Dr Harvey Cushing But it is not always recognized how frequently seizures are associated with tumor, and furthermore how frequently seizures continue after the removal of the tumor With Dr Theodore C Erickson and Dr Isadore M Tarlov[7] I have recently reviewed 703 cases of verified intracranial expanding lesions The incidence of seizures for all supratentorial lesions was 44 per cent. The incidence of fits with astrocytoma, however, was 70 per cent, and of those with meningeal fibroblastoma 67 per cent I shall not go into the details at present as this analysis will be reported elsewhere, but it is obvious that the treatment of epilepsy by the removal of cerebral tumors is less encouraging than its treatment by the radical extirpation of atrophic focal lesions.

Focal lesions of the adult Focal non-neoplastic lesions of adult life have been discussed by me before, and a complete follow up on such cases was reported[8] in 1936. The study and treatment of these cases may be illustrated however, by description of a recent case the somewhat trying details of which still linger in my memory

Case 1 A school teacher of 32 was in an automobile accident and was completely unconscious for 3 days For another 14 days he was aphasic and almost maniacal After that his condition seemed to clear up quite quickly and he resumed teaching About 14 months after the accident, however, he had a major convulsion, and during the succeeding year he had two other seizures He was seen at the time of the accident by Dr Francis Grant, of Philadelphia, who found a fracture low down in the left parietal bone. After his attacks developed he was seen by Dr Stanley Cobb, of Boston, who found some electrographic evidence of a discharging focus in the left parietal region

On the suggestion of both Dr Grant and Dr Cobb we carried out a pneumogram which showed some enlargement of the left lateral ventricle and marked enlargement of the left inferior horn Physical examination was negative, mental activity quite normal No one had seen the attacks, however, and we knew nothing of their pattern. It was therefore decided to postpone decision for a year

At the end of a year we reviewed the case. Pneumoencephalography was repeated, the films showed no change. The electrogram seemed to point to abnormal activity on the uninjured right side of the head, although the electrographic interpretation suggested that this might be due to an artefact produced by movements of the large temporal muscle Consequently I made a small trephine hole in each temporal region and placed an electrode just beneath the bone edge of each hole. Thus the electrode lay between bone and dura, while the insulated wire was brought out through a needle tract in the scalp and allowed to emerge from the dressing in such a way that

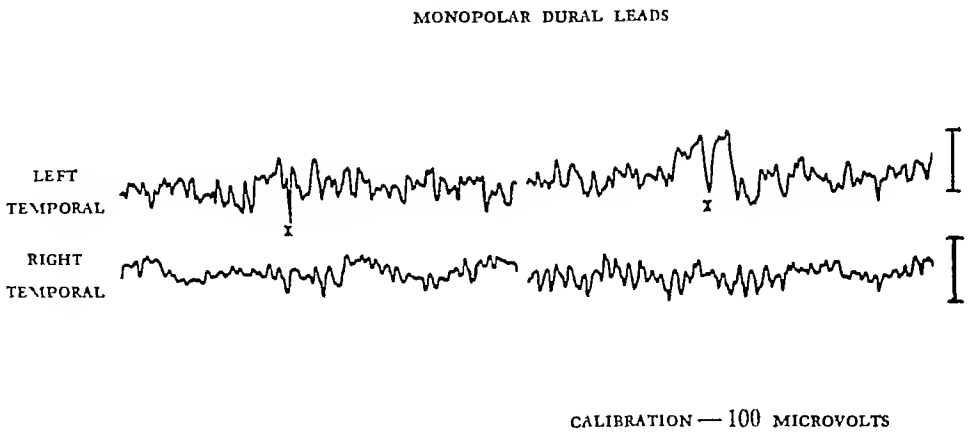


FIGURE 2 *Electroencephalogram, Case 1*

Records made from extradural leads beneath temporal muscle of each side 'X' marks a characteristic spike

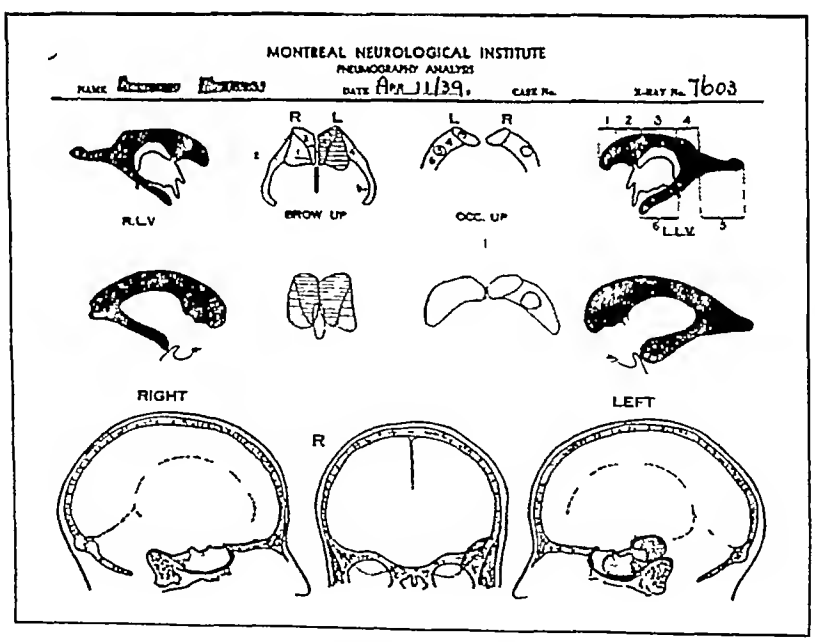


FIGURE 3 *Pneumographic Analysis, Case 2*

This shows enlargement of the left inferior horn of the ventricle beneath the meningocerebral cicatrix

electrograms could be taken on several successive days. These showed that the misleading localization was due to artefact. Both delta activity and epileptogenic spikes were found to be coming from the left temporal region deep beneath the temporal muscle. These spikes may be seen at λ in Figure 2, while the right temporal tracing serves as control.

Craniotomy was therefore carried out, and a dense scar was found in the left temporal lobe beneath the fracture

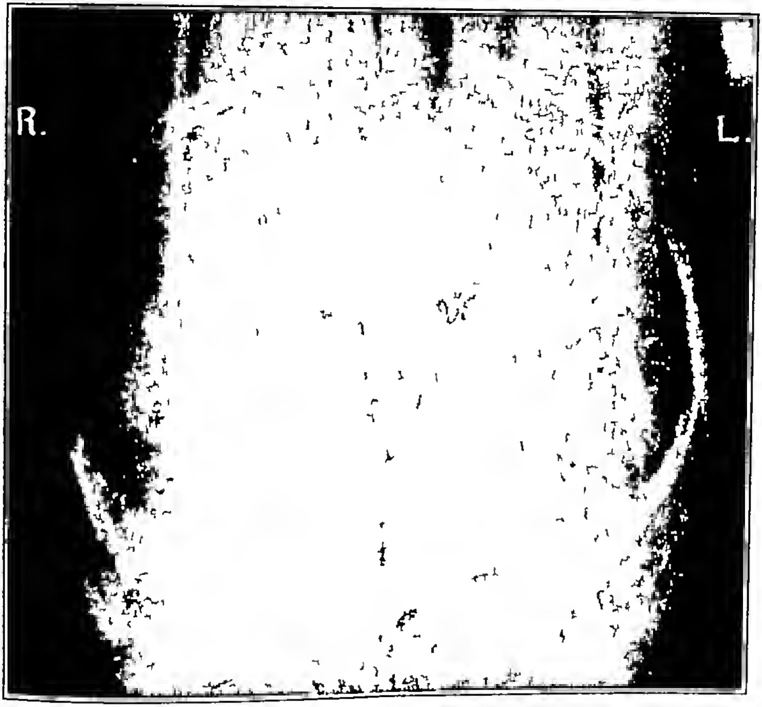


Figure 4. *Pneumogram, Case 2.*

This was taken with the brow up and shows the falx nearer the left cranial vault than the right and the third ventricle still nearer

line (see shading in left lateral view, Figure 3). The posterior portions of the first and second temporal convolutions were involved in a gelatinoid scar and there was some involvement of the third convolution as well. Electrical stimulation was carried out, but it was found impossible to reproduce a seizure by stimulation of the borders of the lesion with any strength of current that I cared to use.

The patient was right handed. The exact localization of speech function is not altogether clear but we had in another case removed a severe scar in this region without producing aphasia. It seemed evident that most of the scarred tissue could not be serviceable for normal function. Consequently we made a radical removal in all three convolutions, insisting that during the removal the patient talk continuously with a psychologist* who sat with him. No defect in speech developed during the removal and he seemed quite well on returning to his room. That evening however he seemed to lose emotional control and swore a good deal. The next day he was completely aphasic and difficult to restrain. Not until the 7th day did speech begin to return. At the present time, 2 months after operation, his speech and mental processes are apparently normal.

Epileptogenic focal lesions of birth and infancy. These lesions are represented by a group of cases heretofore largely unrecognized and I am beginning to suspect quite numerous. Evidence of such lesions may be lacking until the onset of seizures in the first or second decade of life.

It has long been recognized (Little,[8] 1862; Freud,[1] 1897) that paralysis may be the result of birth injury and numerous autopsy studies of new-born babies have demonstrated the frequency of

*Dr. Donald [illegible] kindly [illegible] him during the operation [illegible] study of [illegible]

cerebral compression due to intracranial bleeding There has also been evidence of asphyxia in other organs, and actual softening of areas of the brain due to compression and hemorrhage However, those babies who receive mild cerebral injuries and who do not show paralysis or mental deficiency constitute a little-recognized group Such cases are not brought to the attention of a physician until the onset of epileptic seizures A detailed study of such cases will soon be reported by Pen-

difficult The later development, both mental and phy cal, was normal The usual diseases of childhood curred

Physical examination was essentially negative Cereb spinal fluid and blood examinations were normal Th was no bodily asymmetry, but roentgenograms showed left cranial chamber to be smaller than the right, the s tum pellucidum being nearer the left vault than the ri (Fig 4) The posterior part of the left lateral ventri was somewhat enlarged, chiefly laterally An electrogr report was as follows Epileptiform spikes were obtain from a well localized area beneath the left parietal he

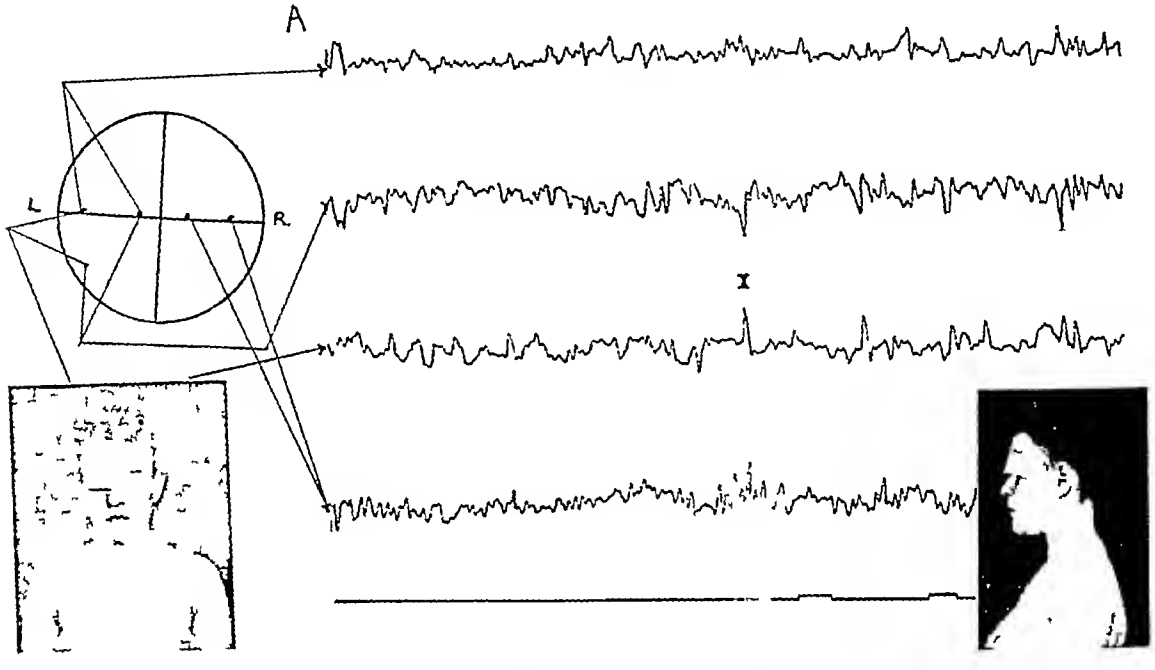


FIGURE 5 *Electroencephalogram, Case 2*

The spike waves, reversing at "X," indicate a focus between the two leads on the left side of the head The localization was at the spot seen above and behind the ear, as shown in the inset

field and Keith[11] The following case serves as an example

Case 2 A French-Canadian girl of 13 was referred to us by Dr James H Remington of Three Rivers, Quebec, complaining of epileptic seizures, which had begun 1 year previously There had been numerous mild attacks (five to ten times daily) consisting of numbness and tingling, *engourdissement,* in the fingers of the right hand At intervals of about a month there had been major seizures, several sometimes occurring in a day These attacks were ushered in by tingling of the fingers of the right hand, as in the minor seizures, but the sensation mounted to the shoulder, the eyes turned to the right, the right arm made clonic movements and the face was drawn to the right. The patient lost consciousness, frothed at the mouth and was incontinent of urine The attacks were not associated with aphasia, although the right arm was apt to be weak after a seizure. The patient was ambidextrous

Her birth was more difficult, as reported by Dr Remington, than that of the other children in the family During pregnancy her mother had suffered from severe headache and vomiting At the termination of 8 hours of labor the child was 'blue and suffocated' Feeding was

region These epileptiform waves were increased amplitude and number with hyperventilation but retai their localization." In Figure 5 the spikes are seen versing at *X*, the lower spot on the patient's scalp in inset indicates the localization.

Operation was carried out under local analgesia, a posterior flap being turned down A patch of small covered with whitish thickening of the pia was found the expected area (Fig 6*a*) This patch included t small gyri, as narrow as 2 or 3 mm in some portions extending to a depth of 2 cm They were pressed toge so that removal left no more space than should be occupied by one gyrus of normal width (Fig 6*b*) The central gyrus lay directly anterior By careful sharp section the pial covering was left intact over it and other surrounding gyri Electrical stimulation of the central gyrus at point C produced a sensation in the tient's right hand which she said was a good deal like aura of her habitual seizures The rest of the brain peared normal There had been adhesions between and pia, over the lesion only, but these did not con blood vessels

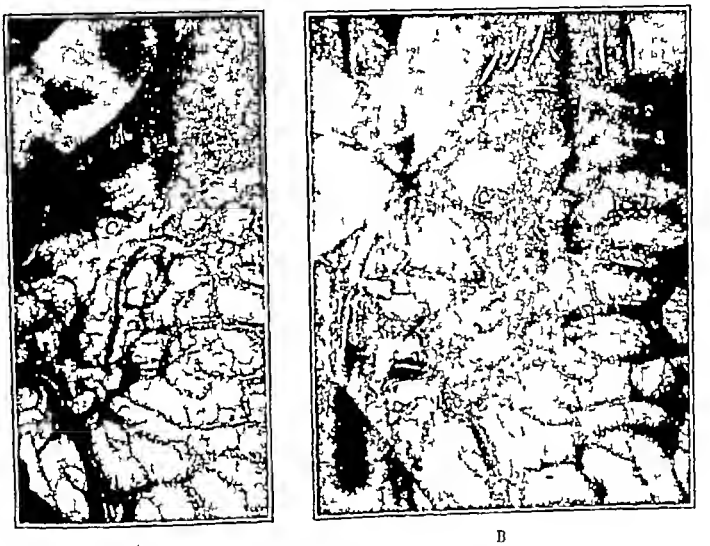
Recovery was uneventful The patient was dischar without medication and has been free from attacks u the present time (6 months) On discharge an ele

gram showed no more epileptiform spikes but some delta waves anteriorly and posteriorly to the zone of removal.

In summary the evidence indicates that this child received an injury at birth which produced an area of focal microgyria. During subsequent growth the cranium remained a little smaller on that side than on the right. The seizures appeared first at the age of 12, arising in the adjacent postcentral gyrus. The lesion was removed, the postcentral gyrus being left intact.

the enlarging hemispheres The normal convolutions therefore crowd on the damaged convolutions, pressing them together so that three or four such convolutions may occupy the space of one normal one and that half the cranial vault may be smaller than the other

In this process of readjustment the shape of the



A B

FIGURE 6. *Operative Photographs Case 2.*

The three small gyri beneath the whitened arachnoid in A" *composed the focus of microgyria.* "B" *shows the brain after removal of the area*

FOCAL EPILEPTOGENIC LESIONS

Focal microgyria This is a condition that has been recognized only recently The results of therapy are in general quite encouraging The mechanism of production is of interest. Apparently during childbirth actual pressure on one convolution or group of convolutions may be greater than elsewhere, so that if the blood supply through the umbilical cord is compromised ischemia may be produced in that convolution or convolutions which is greater than the ganglion cells can tolerate. The latter are irretrievably damaged by a few minutes of complete ischemia while the interstitial neuroglial cells and pia mater may easily survive. This results in a small, shriveled gyrus with few or no adhesions and without evidence of early hemorrhage.

The rapid growth of the cranium during the first year of life is due to the outward thrust of ventricle is preserved while the normal convolutions move forward or back as shown by their unexpected position within the skull or even from the midline outward as shown by the lateral placement of the pacchionian granulations in one case and the lateral origin of the cerebral veins tributary to the longitudinal sinus in another The direction of the movement is toward the damaged gyri wherever they may be Consequently such early lesions are apt to produce little deformity of the ventricle but distinct smallness of one cranial chamber Histological examination of these small gyri shows non ganglionic areas bordered by islands of gray matter and thinned-out gray layers

Brain cyst On the other hand, occlusions of large cerebral arteries, which may occur in utero or during the first year of life, destroy that part of the brain completely except for the pia mater and sometimes the ependymal lining of the ven

tricles This occurs also without adhesions between pia and dura but results in considerable distortion and local enlargement of the adjacent ventricle Small gyri are usually present on the border of the cysts

Meningocerebral cicatrix This lesion, resulting from traumatic laceration and infantile meningitis, causes dense adhesions between dura and pia, which carry blood vessels In the center of such scars there is to be found a zone of tissue free of ganglion cells This scar is very different from that resulting from subdural hemorrhage, which leaves behind only yellowing of the pia and threadlike avascular adhesions

Histology of epileptogenic foci For years I have studied brain scars, and during the past year with the able assistance of Dr Storer Humphreys have examined microscopically epileptogenic focal lesions removed in a series of 95 cases of focal epilepsy, none of which were neoplastic There is in general an area where nerve cells are absent, a non-ganglionic glial scar which may have much or no admixture of connective tissue Between the scar and the normal gray matter there is an intermediary zone of partially destroyed gray matter In all these specimens, however, even twenty or thirty years after the lesion was produced, there is evidence of advancing destruction, occurring chiefly in the intermediary zone in very small patches which surround small blood vessels The evidence, which will be presented in detail elsewhere (Penfield and Humphreys[1]), indicates that these minute destructions occur as the result of complete vascular constrictions of the small vessels of the scar Humphreys[13] has shown that these vessels indeed carry a somewhat greater number of perivascular nerves than do the vessels of the same size outside the zone

The actual focus in which seizure discharges originate is obviously not the scar or the tumor It is the frontier zone between the lesion and normal brain Here electrical stimulation may result in typical seizures and variable vascular spasm seems to occur It is evidently here that abnormal electrical potentials produce the spikes of the electrogram It must be here that there occurs the charging process which is preliminary to the discharge of the fit

Radical surgical therapy should be directed toward removal of the ganglion-free central scar, including the border zone, with reasonable regard to essential brain structure. Excisions must be carried out so as to prevent, so far as possible, revascularization of the margins of the excised area except from the adjacent cerebral vessels. This must be done in such a way as to leave a pool of cerebrospinal fluid instead of an organizing blood clot

Focal microgyria, meningocerebral cicatrix and the cystic cerebral cicatrix of arterial occlusion are apt to produce seizures On the other hand, we have been unable to prove that an old subdural hematoma is in itself a cause of epileptic seizures It may often be associated with other lesions, and may be in a sense partly responsible for the associated intracerebral lesion which does produce epilepsy

In considering the problem of initial cause in the case of any epileptic, the importance of minor cerebral lesions at birth and of thrombosis or inflammatory incidents in the febrile diseases of infancy must be borne in mind, even though the onset of the seizures occurs only as long as ten or fifteen years later In the study of such cases simple anteroposterior roentgenograms of the skull should be examined for proportional decrease in the size of one side of the skull Such a decrease may be taken as suggestive evidence of an early lesion of the type under consideration

* * *

In my experience, patients with objective cerebral lesions of the type under discussion never recover spontaneously There are many such patients who go through life with the diagnosis of functional or idiopathic epilepsy This fact emphasizes the necessity of attempting to classify all cases, both anatomically and etiologically It is necessary to demand in each instance Where is the focus? What is the cause?

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THE ROLE OF THE CERVIX IN PREGNANCY AND LABOR*

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MUCH has been written on the subject of contraction rings and constriction rings, yet many obstetricians are still in doubt as to their precise nature. Depending on the particular text book one happens to read, he may find the condition classified in any one of the following ways: retraction ring, physiologic ring, normal retraction ring, contraction ring, or normal contraction ring. When the ring is supposedly abnormal it is correspondingly classified as pathologic retraction ring, Bandl's ring, pathologic contraction ring or constriction ring.[1] Almost the only point on which there is general agreement is that the ring is at the juncture of what we have been accustomed to call the upper and lower uterine segments. There are those, however, who say that when the ring occurs at this point it is a retraction ring, but others call it a contraction ring and think that it can occur at any point of the uterine musculature. I believe that there is but one ring, call it what we will: that it is always situated at the juncture of the segments, and that if it occasionally seems to be situated elsewhere, this is because of some pathologic process or malposition of the uterus, which makes it difficult for us to believe that the ring is where Nature intended it to be, in other words, that it is a perfectly natural phenomenon.

It seems certain to me that a baby cannot be born through the natural passages as a result of labor without there being a normal physiologic ring. This conclusion I arrived at several years ago as a result of observations made during many operations. Twenty-five or thirty years ago not much had been written about contraction rings, and the consensus was that all rings were pathologic. I concluded that they were purely physiologic, and as years passed I became convinced that labor without a ring was a physical impossibility.

Until 1872 there was no unanimity of opinion as to what changes took place in the cervix during pregnancy and labor. Some authorities held that such changes occurred constantly from the fifth month on—changes which ultimately caused a certain amount of cervical obliteration. Others thought that the cervix, except for a certain amount of hypertrophy and broadening, remained virtually unchanged until a few days or a few weeks previous to the onset of labor, and a few believed that the cervix at term was even longer than the normal non-pregnant one.

In 1872, Braune[2] as a result of his studies of frozen sections of the uterus of a patient who had died at term during the second stage of labor, reported that there was a circular ring which divided the uterus into upper and lower segments, the musculature being thick and solid above the ring and very thin below it. He concluded that the entire lower segment had been derived from the cervix, and that the ring in fact represented the internal os.

In 1875 Bandl pointed out that if Braune's findings were accurate, certain changes must have been taking place in the cervix for weeks or months previous to labor, and declared it inconceivable that what constituted the cervical canal and internal os could be transformed in a few hours into the type of ring described by Braune. He agreed with the latter that there was a ring situated at the juncture of the upper and lower uterine segments, and that the lower segment was derived wholly from the cervix.

Some of those who dissented from Bandl's and Braune's conclusions maintained that part of the lower segment was derived from the cervix, but that the greater part was derived from the lower portion of the body of the uterus. Others held that the cervix had nothing to do with the formation of the lower segment, but thought that the latter was derived solely from the isthmus of the uterus, they called the upper boundary of the isthmus the anatomic os, the lower boundary the histologic os, and all the tissue between these openings the lower uterine segment. It was finally decided that both Braune and Bandl were wrong and that the cervix had little or nothing to do with the formation of the lower segment. As a result these men have passed on with their ingenious ideas thrown into the discard. This paper is an attempt to prove that Braune and Bandl were right and having done so to point out that certain of our so-called obstetric principles are based on false premises.

The statement made above that a constriction or contraction ring is a natural phenomenon like the uterine contraction is a strong one requiring some plausible explanation of the need of the

*From the Obstetrical and Gynecological Department of the Boston City Hospital. Condensation of a paper read at a meeting of the Boston Obstetrical Society November 22 1938 on A Plea for Rationalism in the Practice of Obstetrics.

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ring According to Pascal's law, a force applied to any portion of the surface of an enclosed liquid is transmitted undiminished in all directions, and is exerted unchanged in amount on every equal portion of the surface of the containing vessel, and in a direction at right angles to that surface My conception of the fetus in utero (with unruptured membranes) is that the fetus and amniotic fluid occupy every available cubic centimeter of space, that is, there is at no time a level surface of water with air between it and the walls of the uterine cavity On this assumption, the pressure of the amniotic fluid during or between labor pains is the same in every direction, and is therefore directed toward the surface of the baby's body as well as toward every part of the uterine wall It must be remembered that the contraction of the uterus directs water pressure not only toward the baby but back toward itself Furthermore, if the height of the fundus and the area of the upper segment decrease, there must be a proportionate increase somewhere in the enclosed cavity, since the amount of fluid remains constant up to the point of rupture To be sure, since the resistance offered to the amniotic fluid at the site of the os or dilating cervix is less than at any other place, the amniotic sac is forced down through the os or dilating cervix, and helps by pressure, in accordance with Pascal's law, to dilate the latter further As labor advances and the presenting part descends in the pelvis, it finally becomes so firmly wedged against the walls of the lower segment that it may be impossible for fluid to be directed any longer toward the dilating os, unless there is a new pressure at the lower part of the containing vessel Such pressure may be caused by the contraction ring's so constricting the entire cavity at a certain point during every contraction as to cause a modified figure-of-eight condition, so that water is forced between the presenting part and the lower segment, not only helping to dilate the os but also increasing the size of the segment

The theory just presented outlines what we may call an offensive function of the normal contraction ring On the other hand, it may be that the ring exercises a defensive function, in accordance with the principle of Archimedes, by which bodies immersed in a fluid are buoyed up by a force equal to the weight of the fluid they displace, and since the under side of a body is always deeper in the liquid than the top side, the upward force of the liquid on the under side is always greater than the downward force of the liquid on the top side That is to say, the ring prevents the upward pressure of water from constantly dislodging the head, by holding the presenting part just firmly enough to prevent its receding

These contrasting theories are proposed simply as possible explanations of the apparent natural evolution of the contraction ring

Every obstetrician has met with serious dystocia because of the presence of a contraction ring Judging from my own experience, the ring never causes trouble before the rupture of the membranes, but only after it By the laws of physics, until rupture occurs it is impossible for the ring to cause more than a certain degree of pressure, when as a result of the rupture the water pressure no longer controls the contractility of the ring, the latter can and often does become troublesome We have also had difficulty in delivering an aftercoming head because of a contraction ring's gripping the neck very tightly, and also in doing versions or delivering by forceps These difficulties may have been due to there no longer being any water pressure directed against the ring by the amniotic fluid

It may be asked how this theory can explain or can be reconciled with cases in which the membranes are ruptured before labor, or to those in which induction is caused by artificial rupture Although it is admittedly possible for a baby to be delivered as a result of labor which did not start until after rupture, this does not prove that there is not a natural reason for a normal physiologic contraction ring In my own cases of such delivery and of those of artificial rupture, the contraction ring, when felt, invariably appeared especially pronounced, probably owing to the fact that there was no water pressure to control its contraction action

In the medical schools of thirty-five years ago students were much impressed by the expression "the taking up of the cervix" After they had delivered a few cases they were sure that the cervix had been taken up somewhere, but when or how they were still very much in doubt Even today well-trained obstetricians are not agreed as to the meaning of the term That the cervix is taken up, and to a point several centimeters above the former level of the internal os, there is absolutely no doubt, and there seems little question that the contraction ring is only a former part of the cervix I believe that the taking up starts immediately after the beginning of pregnancy, and that Hegar's sign of softening between the cervix and fundus is only the commencement of the process The same holds true of the Braxton Hicks painless contractions of early pregnancy I am strongly of the opinion that the numerous indefinite contractions, some painless, others painful which many patients have during pregnancy are due to the constant changes taking place in the cervix, and are part of the phenomenon which we call "taking up" In addition, many so-called

false labors" are merely painful or painless contractions due to the cervix's being taken up even more before true labor begins

Irving[3] states, as proof that the contraction ring is not confined to the later months of pregnancy or the beginning of labor at term, that he has seen rings in patients operated on in the earlier months of pregnancy This is conclusive evidence that a full-term pregnancy is not essential to the presence of a contraction ring I have seen postpartum signs of such a ring immediately after very early miscarriages, this subject is discussed more fully below

Many writers of textbooks imply that the contraction ring is somewhat of a "mystical condition" which disappears immediately after delivery They assert that once an incision has been made and the baby delivered by cesarean section, there is no further evidence of a ring Several others report that when a hysterectomy has been done in cases of contraction ring no sign of it could be found when the specimen was examined Still other authors declare that it has been impossible to find evidence of a ring at autopsy Such statements appear to signify one of three things if the operation was a supravaginal hysterectomy, it was done above the level of the ring so that the ring did not appear if the ring was not found at autopsy the patient either lived long enough after delivery for the ring to disappear, or a diagnosis of bad cervical laceration with rupture of the uterus into the broad ligament was made, when the true diagnosis was that of a badly lacerated cervix with a badly lacerated contraction ring

Many textbooks dismiss the entire question of contraction ring with the birth of the baby and make no mention of the possibility of a ring's persisting after birth However, Irving[4] describing the proper way to pack the uterus in postpartum hemorrhage, mentions that the contraction ring may seriously interfere with this procedure, thus recognizing the presence of such a ring even after delivery of the baby and the placenta

As mentioned previously, I have performed many operative deliveries In the early years of my practice, when making an immediate postpartum examination, I was impressed by the fact that the cervix was a far different body than I had been taught to believe it There were times when it seemed possible that the forceps had caused considerable trauma I therefore decided to allow all cases to deliver normally, but the findings were identical The same results occurred when I discontinued the use of pituitary extract, having in mind the possibility of its being the causative agent. I finally realized that whether patients were delivered by forceps—high mid or low—or by version, or normally, or with or without pituitary, the findings were invariably the same.

At this point it may not be amiss to describe the actual appearance of the cervix Immediate postpartum examination shows it to be composed of thinned-out, flabby tissue, and circular, the inner rim of the circle being what was formerly the external os The examining finger on being inserted through the external os and moved upward so as to meet the internal os invariably encounters a hard muscular opening Between these two openings, however, the finger can be carried anteriorly toward the bladder to about the level of the uterovesicular ligaments, posteriorly to a point comparable to the level of the rectouterine ligaments and laterally to a point as high as and underneath the cardinal ligaments of Kocks. There is thus outlined a circular area accordion-pleated and almost the diameter of a fetal head This cavity which, explored from the external os, extends in every direction away from the examining finger, finally turns on itself and goes downward and inward toward what I have always thought to be the internal os

In a case I encountered several years ago, this condition found on immediate postpartum examination was completely altered twenty four hours after delivery There was an external os, a cervical canal, and an internal os very much like the normal cervix at the start of pregnancy or the non-pregnant cervix. It was clear that some change had taken place in the postpartum cervix, but its precise nature I was unable to determine. I now feel certain that what was thought to be the postpartum contraction ring was also the internal os

Some specimen cervices, taken mostly from my own patients, are shown in the accompanying illustrations. Figure 1 is a microphotograph of a non-pregnant cervix amputated during an operation for prolapse. In this connection, Martzloff[5] describes the normal cervix as follows

> The wall of the cervix is composed principally of smooth muscle which in greater part is circularly arranged, but there are also fibers here that run longitudinally Outside of the circular layer there is, according to Stieve, a well-defined longitudinal muscle layer and Duhrssen has described an outer zone composed almost entirely of elastic fibrous stroma The muscle fibers, which measure from 60 to 80 mm. (Stieve) are held together by a dense fibrous stroma which gives the cervix its firm consistence. We have never been able to demonstrate any of these layers by maceration and dissection methods. In fact, the study of the relations of the muscle layers of the cervix is difficult even when aided by the use of differential staining methods.

The specimen here illustrated shows dense muscle layers Furthermore, Martzloff in describing lon

gitudinal layers, circular layers and elastic fibrous layers seems to give all the necessary components of a taken-up cervix and a contraction ring

Figure 2 shows an intrapartum cervix at term The specimen was removed from the cervix when

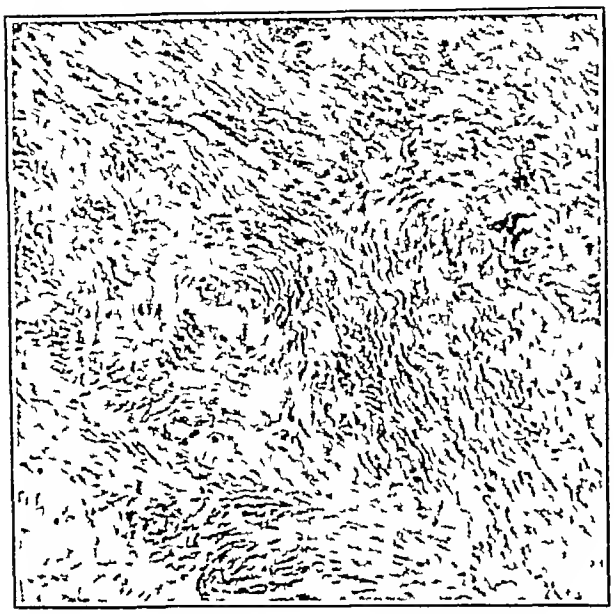

FIGURE 1 *Non pregnant Cervix High power photograph*

it was dilated two or three fingers There is relatively much less muscle than in the cervix shown in Figure 1, and there is evidence of severe hemorrhage, showing the trauma suffered during labor

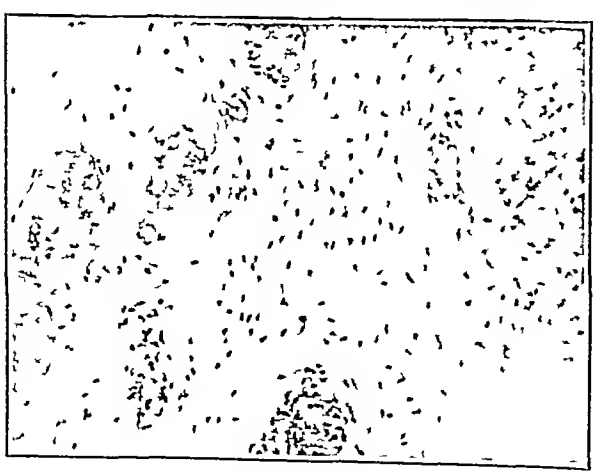

FIGURE 2 *Intrapartum Cervix High power photograph*

Figure 3 illustrates a cervix at term immediately post partum, there is paucity of muscle fiber and, again evidence of marked hemorrhage Obviously the intrapartum cervix in Figure 2 and the immediately postpartum cervix in Figure 3 are both markedly different from the non-pregnant cervix As will be readily understood it was almost impossible to obtain a specimen from a pregnant cervix at any time from the start of pregnancy to the beginning of labor without doing the patient serious harm

Figure 4 shows a cervix fifty-two hours after delivery, there is more muscle tissue than in the

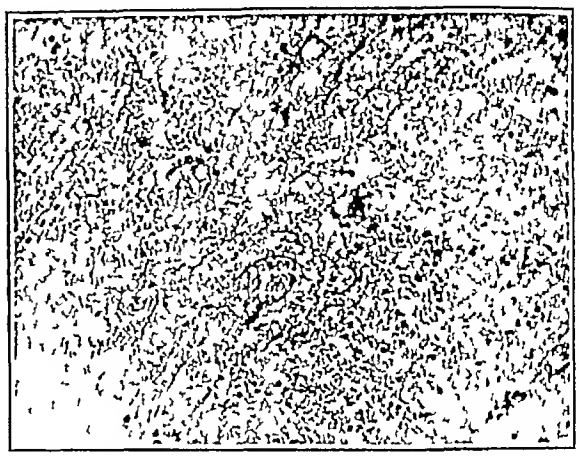

FIGURE 3 *Immediately Postpartum Cervix High power photograph*

intrapartum or immediately postpartum cervix, and this cervix more nearly approaches the non pregnant cervix in Figure 1

My clinical observations, plus the evidence of

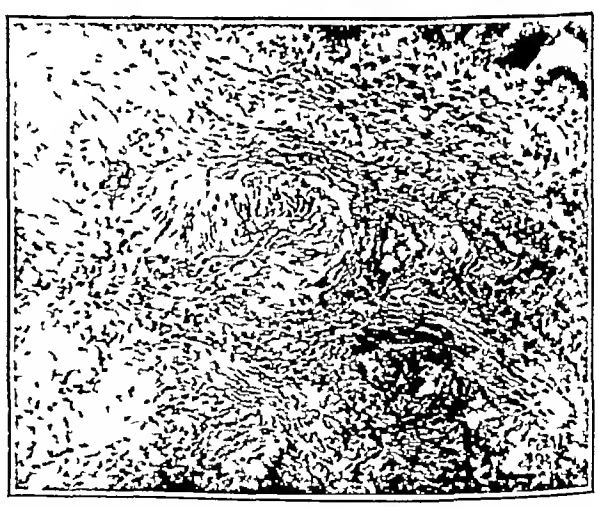

FIGURE 4 *Fifty two-hour Postpartum Cervix High power photograph*

the microphotographs, indicate that the changes which have taken place in the cervix are due to its having been taken up, that because of this a ring has been formed, and that the ring is derived wholly from the cervix, thereby proving that the lower uterine segment is nothing but what was the cervix at the start of pregnancy In spite of this testimony, however, stronger evidence is doubtless required

The postpartum cervix described in detail earlier in this article as discovered in my private cases has been found without exception in a series of cases recently examined at the Boston City Hospital None of the patients had been given pituitary extract and all the deliveries were normal In every case the cervix, the external os, the internal os and the accordion pleated cavity were the same A second examination, made from five and a quarter to twenty-four hours post partum revealed a normal external os, a normal cervical canal and a normal internal os It was thus even more evident that changes not as yet understood were constantly taking place in the cervix, the result being a normal appearing cervix within a comparatively short time after delivery The cervix which was originally taken up had been taken down" Up to this time these changes have not been described largely because of the usual warnings given by obstetricians against postpartum examinations, for fear of infection

As further corroborative evidence, Figure 5*A* outlines the position of the cervix immediately post partum with the external os and the accordion pleated cavity between the external os and the internal os or contraction ring running in every direction the body of the uterus appears to be directly over the examining finger extending inward toward the os A silkworm-gut suture has been passed through the contraction ring and tied loosely in the vagina Catgut sutures have been placed in the farthest recesses of the cavity Figure 5*B* shows the condition twelve hours later a normal postpartum cervix, with the lower strand of the silkworm-gut suture coming out through the cervical canal and the catgut sutures in the sides of the canal, thereby proving that the accordion pleated cavity with the sutures inserted as described, has become a normal cervix and a normal canal This seems conclusive evidence that the contraction ring is only the former internal os in the non pregnant uterus and that the lower uterine segment is only what was the normal non pregnant cervix

In a search for corroborative proof, I took x ray photographs of what I am convinced was the so-called lower uterine segment, immediately post partum The first (Fig 6) shows nothing but the uterine cavity The second (Fig 7) shows a sterile strip soaked in Lipiodol the tip of which was placed just within the contraction ring and the rest of which is spread in the cervical cavity—

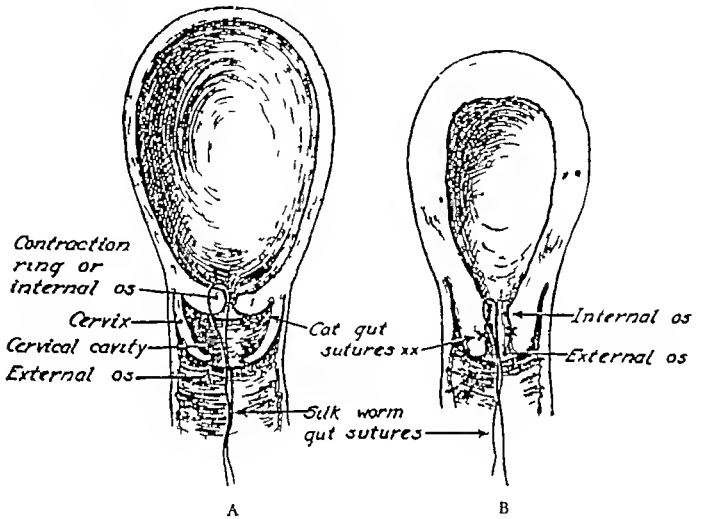

FIGURE 5

A Immediately postpartum contraction ring and cervical cavity with silkworm gut suture through the former and catgut sutures on sides of the latter

B Contraction ring and cervix twelve hours post partum with silkworm gut suture coming out through the cervical canal and catgut sutures in the cervical canal

to week but with changes constantly occurring in the cervix which prepare what has been called the lower uterine segment — but which I feel sure is the cervix — for labor The cervical muscle fibers are continually being stretched or pulled, and just as certainly are drawing away from the placental attachment Does not this explain the suddenness and painlessness of hemorrhage in placenta previa

FIGURE 10

A Skiodan pack is in the cavity of the uterus and another in the cervical cavity, showing two distinct cavities separated by a contraction ring This plate was taken immediately post partum

and its sudden recurrences? Now let us visualize this case of central previa at term, with the outer border of the placenta attached above the contraction ring, and the inner part's being forced down with each contraction so as to become U-shaped Hydrostatic bags are of doubtful value, indeed, it is impossible to see how they can possibly stop hemorrhage, and they may cause serious harm My explanation of the so-called lower uterine segment shows that delivery, either by Braxton-Hicks version or by cesarean section, is a far more rational procedure

Uterine rupture is considered by many authors as of two types — one occurring through the top of the fundus and the other into the broad ligaments It seems highly probable that many cases which have been diagnosed as rupture into the broad ligaments represent only tears through the contraction ring or the internal os, which can be better treated by repair from below than by hysterectomy from above

In doing internal podalic versions, it will be of value to realize the true structure of the lower uterine segment Let us also bear in mind that a contraction ring is a normal phenomenon, and exercise extreme caution in dilating it

In cases of postpartum hemorrhage in which the uterus must be packed, it is far better to put tenacula on the contraction ring or internal os than to put them on the thinned-out cervix This facilitates the packing and lessens the likelihood of exerting too great force on the weakened cervix

The incidence of carcinoma of the cervix may, I believe, be materially lowered, in view of the findings here presented, if immediate cervical repair is more frequently done — provided the tear seems serious enough to demand operation Furthermore, the new concept of the lower uterine

FIGURE 11

A Lipiodol pack is in the uterine cavity, with the end of the pack in the cervical canal, showing that the cervical cavity has become completely obliterated This plate was taken twenty two hours post partum

segment indicates that since there is a distinct need of the cervix in married women during the child bearing period, one should hesitate a long time before amputating it Moreover the removal of so much muscular tissue in the process of repair as is now practiced seems to me a questionable procedure, and it would be far better to remove the mucosa and as little muscle tissue as possible.

I have also observed occasional cases of cervices

badly lacerated bilaterally with erosion and eversion probably owing to a delivery in which not only the cervix but also Bandl's ring was torn and the tear was carried up into what is really the cavity of the uterus When during the first few hours after delivery the cervical cavity becomes the normal cervix, these extensive tears have made it impossible to secure proper apposition of the cervical parts In cases of this type I believe that it is wiser not only to repair the lower cervix but also to take stitches through the internal os, in order to obtain a better cervical result All these improvements may be expected to lower the incidence of carcinoma of the cervix.

In the light of the new concept it becomes apparent how necessary it is to make an immediate diagnosis in cases of inversion of the uterus and how relatively impossible it is to reduce the inversion from below unless the attempt is made at once. The presence of the contraction ring it seems certain, also tends to prevent inversion of the uterus—except when it has been badly torn Possibly one function of the normal contraction ring is to help in preventing prolapse of the cord —Nature's defense mechanism

Many miscarriages in the early months especially in cases heretofore classified as those of habitual abortion may be due to some abnormality of the cervix which interferes with a normal physiologic process, thereby tending toward miscarriage I wish to stress the fact that there is a so-called Bandl's ring in cases of early miscarriage, just as there is in every labor at the end of pregnancy, and that it is just as necessary and natural for a Bandl's ring to form in miscarriages as it is in full-term pregnancies. Many miscarriages the cause of which we have so far been unable to explain may well be early cases of placenta previa caused by the muscle fibers of the lower uterine segment being torn away from the placental site.

SUMMARY AND CONCLUSIONS

Proof has been furnished which appears to support the following theories

What we have been accustomed to call the lower uterine segment is only what was the normal cervix before the onset of pregnancy

The cervix is really taken up, and as a part of this process a ring is eventually formed call it what we will constriction ring, contraction ring or Bandl's ring

This ring is a perfectly normal physiologic phenomenon and has a distinct function in the process of labor

The taking up of the cervix starts in the early days of pregnancy and continues even through labor

Within a few hours after the end of labor the cervix is taken down, and begins to resume its normal condition previous to the beginning of pregnancy

There is present what we may term a cervical cavity but which is usually called the lower uterine segment. In order to prove this, it is necessary to make immediate postpartum examinations, since the cervical cavity cannot be demonstrated unless the patient is examined within the first few hours after delivery

It is pointed out that since the lower uterine segment has been proved to be nothing but what was the normal cervix previous to conception, many present-day obstetric principles and procedures should be altered

The first stage of labor may be described as consisting of two distinct parts the taking up of the cervix and the dilatation of the external os Since the external os does not begin to dilate until the cervix has been completely taken up and a ring has been formed, it is proposed to divide labor into five stages instead of the classic three, as follows

(1) The taking up of the cervix
(2) From the beginning of dilatation of the external os to its full dilatation
(3) From full dilatation of the external os to birth
(4) From birth to expulsion of the placenta
(5) From expulsion of the placenta to the time when the cervical cavity has become completely obliterated and a normal cervix has been formed—a matter of only a few hours

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ACUTE GONOCOCCAL TENOSYNOVITIS*

Report of Seven Cases

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ACUTE suppurative gonococcal tenosynovitis involving the flexor tendons of the hand has long been recognized as a clinical entity,[1] but reported cases have been very few, particularly those in English. Birnbaum and Callander[2] have reported 2 cases and reviewed the literature. Murray and Morgan[3] have reported 1 case and Cleveland[6] 2.

It is the purpose of this paper to report 7 cases and to describe methods of diagnosis and treatment. Five of these cases have been seen during the past eighteen months and constitute one third of the number of cases of acute tenosynovitis of all types seen during this period. The other 2 are the only other proved cases of gonococcal tenosynovitis found in the records of the Massachusetts General Hospital, 1 in 1903 and 1 in 1935. For cases with such etiology to constitute one third of all tenosynovitis cases seen in the past year is a surprising figure, and one may infer from this that acute gonococcal tenosynovitis is far commoner than case reports indicate. Other authors cited herein have expressed the same opinion. Further confirmation was found in a study of the records of the Massachusetts General Hospital for the last eight years. Eight out of 60 cases of acute tenosynovitis of all types definitely suggested a gonococcal etiology, although it was unsuspected by the surgeon and no apparent effort was made to identify the infecting agent.

The diagnosis of this type of tendon-sheath infection is of more than academic or bacteriological significance, because, as will be illustrated, the treatment of this and of other types should differ radically. If the disease is treated as though it were ordinary pyogenic infection the hospital stay may be prolonged and the end result poor.

ETIOLOGY AND PATHOLOGY

The etiology and pathology of gonococcal tenosynovitis have been well described elsewhere.[2] It may be noted however, that the pus found in these cases is strikingly characteristic in appearance, being translucent, greasy and gray, exactly like that which may be seen pouring from the fimbriated end of a fallopian tube acutely infected with gonococci.

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DIAGNOSIS

The gonococcal etiology of acute tenosynovitis should be suspected in any case in which there is no history of antecedent trauma, in which there is a concomitant primary focus of gonorrhea and in which the signs and symptoms appear less severe than their duration would suggest. Nevertheless, in this series 1 patient developed such tenosynovitis following a cut of the finger, and in 3 others the presence of a primary focus could not be demonstrated, hence these factors should not be relied on exclusively in making a diagnosis. In each case the classical signs of acute tenosynovitis were present, but in only 1 case were they as outstanding as one would have expected had the infection been attributable to the staphylococcus or the streptococcus. Redness, tenderness, swelling and limitation of motion were always observed, but in only 1 case were they particularly severe, and it was noted that in some cases the infection appeared localized in only a part of the sheath rather than extending so as to involve the entire structure. The systemic reaction to infection as evidenced by fever and a high white-blood-cell count was in most cases slight.

Once the diagnosis of gonococcal tenosynovitis is suspected it may be established only by means of a positive smear or culture of the pus in the tendon sheath. Access to this may be had by means of aspiration with a syringe and hypodermic needle. This procedure is carried out in the operating room under aseptic technic. Anesthesia is not required. The puncture is best made through the center of the middle digital crease, at which point the tendon sheath is very superficial. Material thus obtained is smeared, stained and examined immediately, and before further exploration is instituted. Cultures should also be made.

Although this technic has been used in only our last 3 cases and was completely successful in only 2, the ease with which the diagnosis has been made in these cases justifies its use as the initial procedure to be followed in every case. Moreover, it appears probable that in the future most cases of gonococcal tenosynovitis will be diagnosed in this manner.

If the aspiration does not yield enough pus to make a clear-cut diagnosis by smear, or if for any other reason the diagnosis cannot be established

by this means, as in Case 6, an exploratory incision should be made under general anesthesia and with a tourniquet. Further smears and cultures are taken from the tendon sheath. If gonococci are found the incision is closed; if no organisms of any type are found and gonococcal tenosynovitis is strongly suspected, the incision may be closed and the result of the cultures awaited.

A word should be said as to the technic that has been found most satisfactory for culturing gonococci. Ascitic agar plates are brought in the operating room, and pus is streaked on them as soon as it is obtained. The plates are immediately placed in jars into which carbon-dioxide gas is blown. The jars are sealed and incubated. Cultures taken in this manner are almost uniformly successful.

TREATMENT

The optimal treatment for gonococcal tenosynovitis is immobilization with application of local heat, and not incision and drainage as is generally recommended. Kanavel,[4] Grinnell[6] and others have pointed out the danger of secondarily contaminating the incision used in drain a tendon sheath, not only at the time of operation but especially during postoperative dressings. Secondary infection will seriously alter the prognosis of gonococcal tenosynovitis. Furthermore, in a study made of the results of all types of incisions of the tendon sheath, a significant proportion of the poor end results were found attributable to scar contractures. Good results have been obtained by simply splinting the hand and applying local heat, but with the advent of sulfanilamide and the excellent results attributable to this drug in gonococcal infections it appears all the more evident that if a diagnosis of gonococcal tenosynovitis can be established, surgery is not only unwise but contraindicated. Cleveland[6] in 1923 commented on conservative treatment. He reported a case in which, following drainage of gonococcal tenosynovitis in one finger, the patient subsequently developed the same signs and symptoms in other fingers. These were not drained and it was found that the lesions subsided with the application of local heat.

Obviously this optimal treatment can be pursued only if the diagnosis can be made by aspiration of the tendon sheath, unless the clinical picture is so clear, as on occasion it may be, that positive diagnosis can be dispensed with entirely.

Finally a word of caution should be added. It must be strongly emphasized that conservative treatment as outlined above should be instituted only if the gonococcal etiology has been established. The dangers of postponing incision and drainage of acute tenosynovitis caused by common pyogenic organisms are well known and have been emphasized by many authors. If real doubt as to the etiology exists, a case of acute tenosynovitis should be handled in the classic manner.

RESULTS

Fortunately, in the present series of cases the results have all been good. No serious permanent deformity has occurred because there was no secondary contamination in the cases that were operated on and the scar contractures yielded for the most part to physical and occupational therapy. It is probable, however that they did well in spite of the treatment rather than because of it. One of Birnbaum and Callander's[2] 2 patients, who were treated by means of drainage, developed complete rigidity of the right forefinger, and Murray and Morgan's[3] patient treated in the same way lacked ability to extend the thumb completely.

In the 2 cases (Cases 5 and 7) which were diagnosed by means of aspiration of the tendon sheath the patients spent less time in the hospital and regained normal function of their fingers much sooner than did the others.

CASE REPORTS

Case 1 (M. G. H. 133857). N. D., a 3-year-old girl, entered the hospital August 29, 1903 with a 2 weeks history of swelling of the left wrist, right forefinger and right foot and a vaginal discharge. The temperature was 101° F. and the pulse 160. Physical examination showed the finger to be extremely tender, swollen and painful on motion. A diagnosis of gonococcal tenosynovitis was made and operation advised. The entire length of the tendon was exposed through infiltrated and edematous tissue" and a quantity of pus was found. This was cultured on hydrocele agar by Dr. Homer Wright, and a pure and abundant growth of gonococci developed. The wound was treated with corrosive dressings and the patient made an uneventful recovery. She was discharged September 18. One year later she was said to be without disease or deformity.

Case 2 (M. G. H. 350037). C. S., a 20-year-old, single salesgirl entered the Emergency Ward December 4, 1935 with a 5 days' history of pain in the left index finger and left foot. There was no history of trauma. For the previous week she had had dysuria and a vaginal discharge. She admitted exposure 2 weeks before. The pain in her finger had increased considerably the day before entry and she felt flushed and feverish. On entry the temperature was 103.5° F. and the white-cell count was 17,400 with 88 per cent polymorphonuclears. Physical examination showed heat, redness, edema and tenderness over the entire extent of the left forefinger. The bursae of the wrist were not affected. There was extreme pain on attempted motion. A cervical smear was found to be positive for gonococci. A diagnosis of gonococcal tenosynovitis was made, and operation performed. A flap type of incision as described by Auchincloss was made. The pus found was immediately smeared and gonococci were demonstrated. Accordingly a primary suture of the wound was done and the patient treated with immobilization and local heat. She made a complete recovery.

Case 3 (M G H U91358) V L., a 60-year-old widow, entered the Emergency Ward November 10, 1937 She complained of pain in her right 5th finger for 4 days Six days before entry she cut her 2nd and 5th fingers over the proximal phalanges on the palmar aspect with a knife. Four days before entry she first noticed pain around the cut on her 5th finger Despite hot soaks and poultices the pain grew worse and the finger began to swell Physical examination showed slight edema and moderate tenderness over the two proximal phalanges of the 5th finger and the hypothenar eminence The old cut appeared clean and not deep There was no lymphangitis The temperature was normal, and the white cell count was 10,000 Small lateral incisions as described by Kanavel[4] were made The pus found was smeared and cultured, but not on ascitic agar No organisms could be demonstrated Four days after admission, tenderness developed over the wrist joint, the temperature was 98 6°F, and the white-cell count 7000 On November 15, while preparations were being made to explore the bursae of the wrist, she developed a severe conjunctivitis Smears from the eye were positive for gonococci The patient was transferred to the Massachusetts Eye and Ear Infirmary for treatment She was given sulfanilamide and all her lesions rapidly cleared A month later she was noted to have a 45° flexion deformity This has improved considerably with physical therapy

It was this case that aroused our interest in gonococcal tenosynovitis In the light of subsequent experience, the diagnosis might have been made much earlier than it was, and some of the complications and the deformity of her finger could have been avoided. This case was complicated by the preceding history of trauma, and clearly demonstrates the necessity of ever keeping a gonococcal etiology in mind

Case 4 (M G H U25955) J O L., a 32 year-old, single domestic, entered the Emergency Ward November 15, 1937, complaining of pain and swelling in the left 4th finger for 24 hours One week before she had pricked a finger with a splinter she could not remember which one. The day before entry she noticed pain and stiffness at the base of the left 4th finger The pain rapidly became worse and she was unable to use her left hand She denied exposure, and no symptoms of gonorrhea could be elicited On entry the temperature was 99 6° F, and the white-cell count 12,000 Physical examination showed painful swelling over the proximal two phalanges of the 4th left finger and the adjacent web spaces There was diffuse redness and the finger was held in semiflexion Tenderness was maximal over the proximal phalanx. A cervical smear was negative A midline incision was made and a smear showed gonococci Sulfanilamide was given, and 2 days later a secondary suture was done. The complement fixation reaction for gonorrhea was reported positive. The patient was discharged November 23 After discharge she developed a flexion deformity which was treated with a banjo splint. On February 23, 1938, she showed full range of motion of the finger

Case 5 (M G H U106318) W N, a 23-year-old, single shoe worker, entered the Emergency Ward January 29, 1938, with a complaint of pain in his right 5th finger for 4 days He had suffered no known injury, but the pain had become increasingly more severe and swelling had developed One month previously he had first noticed dysuria and a urethral discharge. This was not treated The temperature on entry was 100 6°F., and the white-cell count 16,000 Physical examination showed tenderness over the proximal part of the tendon sheath with the finger held in 40° flexion and considerable pain on attempted extension There was moderate edema Coursing up the forearm as far as the elbow were several streaks of lymphangitis The general impression given was that of typical acute tenosynovitis, but all observers agreed that the signs were less acute than one would expect with a duration of 4 days A diagnosis of gonococcal tenosynovitis was made and aspiration with a syringe and hypodermic needle was attempted Through the middle digital crease it was found easy to withdraw a few drops of gray, greasy pus A smear of this showed abundant gonococci Accordingly the hand was splinted, local heat applied and sulfanilamide administered The urethral smear was also found to be positive for gonococci In 4 days the patient was entirely asymptomatic, and he was discharged February 4 as cured On June 4 no abnormality was noted

Case 6 (M G H U140746) V J, a 25 year-old house wife, entered the Out Patient Department July 18, 1938. She stated that she had awakened 8 days previously and found her left 3rd finger in semiflexion and very painful to extend There was no history of trauma She treated her hand with heat at home, but there was no improvement. No history of gonorrhea could be obtained. Physical examination showed the finger to be held in 70° flexion and to be edematous There was tenderness over most of the tendon sheath The temperature was 98 8°F., and the white-cell count 9300 The impression gained was that this infection was almost surely gonococcal in origin. In addition a cervical smear showed gonococci Aspiration of the tendon sheath as described above was attempted The smear thus obtained was thought to show gram positive cocci With this unexpected finding it was thought wisest to make an exploratory incision This was done through a small flap incision and greasy, gray pus obtained Smears of this showed no organisms at all. (It was later found that the first smear was treated with old precipitated stain which explains the puzzling findings) Accordingly the wound was not drained but closed Splints and local heat were applied and sulfanilamide was administered. Cultures on ascitic agar under partial carbon-dioxide tension had been taken, and in 36 hours an abundant growth of gonococci was obtained. There developed an arthritis of the wrist, which cleared quickly under treatment, and the patient was discharged July 27 with the wound well healed She had, however, a slight flexion contracture which should ultimately respond to therapy

In this case the clinical picture was so typically that of gonococcal tenosynovitis that had the aspiration smear shown no organisms conservative treatment would have been instituted

Case 7 (M G H U186515) B D, a 27-year-old house wife, entered the Out Patient Department April 10, 1939, with a letter from her physician requesting treatment for tenosynovitis One week before she had twisted her left middle finger, causing a slight abrasion near the tip Five days before she had noticed a sudden onset of pain, which increased gradually so that 24 hours before entry the pain had become intolerable. During this time she had noticed increasing swelling and redness involving the entire finger and spreading somewhat over the rest of the hand.

Her past history was suggestive of gonorrheal infection, but two cervical and urethral smears were found to be negative

At entry the left hand was edematous and red, particularly the 3rd finger, which was tense and held in 40°

lexion. There was exquisite tenderness along the course of the tendon sheath and slight tenderness over the palm of the hand. Attempted extension of the finger caused severe pain. The temperature was 99.8 F. and the white cell count 11,600. A diagnosis of gonococcal tenosynovitis was made. Aspiration of the tendon sheath as described above was done. Immediate smear showed numerous gonococci. Cultures taken at the same time resulted in a pure culture of gonococci 36 hours later. The arm was splinted and poulticed and sulfanilamide was administered. In 5 days the hand appeared entirely normal. The patient was hospitalized for 2 additional days, however as she had developed a leukopenia of 1200. This became normal on cessation of the drug.

SUMMARY

Gonococcal tenosynovitis is undoubtedly far more prevalent than is commonly believed. It is probable that most such cases in the past have been undiagnosed and treated as being of ordinary pyogenic origin, with resultant long periods of economic disability. The value of an immediate smear of material obtained from the tendon sheath has been pointed out. Such material may be obtained by needle aspiration or an exploratory incision with primary closure. The treatment should be conservative rather than incision and drainage.

Seven case reports are presented.

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AGRANULOCYTOSIS CAUSED BY SULFANILAMIDE*

Report of a Recovered Case

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WE REPORT a case of agranulocytic angina following the use of sulfanilamide and its recovery following transfusions and the administration of Pentnucleotide. There have been found in the literature 9 cases of this complication following the use of sulfanilamide with only 2 recoveries,[1] Long[2] writes that there have been 6 cases of agranulocytosis in the Johns Hopkins Hospital, with 2 recoveries. Undoubtedly there must be a greater incidence of this complication in sulfanilamide therapy than has been reported.

CASE REPORT

J. J., a 23-year-old, married waitress, was admitted to Rutland State Sanatorium June 14, 1938. One brother died of tuberculosis in November, 1937. Otherwise the family history was non-contributory. The patient had had pneumonia in childhood and bronchitis in 1934. The onset of catamenia occurred at 16. The menses were irregular until after the birth of a normal girl in September, 1935, when they became regular. There was a slight discharge postmenstrually, otherwise menstruation was normal. The patient had had cough, expectoration and lower abdominal cramps for 1 year previous to admission. The case had been diagnosed as pulmonary tuberculosis, Stage I. Artificial pneumothorax had been instituted by a private physician prior to admission.

From admission to July 26, 1938, the patient ran an afternoon temperature of 99 to 99.2 F. During this time she continued on bed rest and artificial pneumothorax. She complained of mild cramps across the lower abdomen on several occasions but seemed to be suffering from no acute illness. The red-blood cell count on admission was 4,400,000 and the white-blood-cell count 8700 (Table 1).

On July 27 the patient complained of pain in the posterior thorax which radiated to the left flank. The temperature rose from 98 to 101 F., the pulse from 80 to 120 and respirations remained at 20. Fluoroscopy showed no pleural effusion. The pain had meanwhile shifted across

TABLE 1. *Summary of Blood Findings*

DATE	RED BLOOD CELLS	HEMOGLOBIN	HEMATOCRIT	TOTAL	POLYMORPHONUCLEARS: TOTAL	POLYMORPHONUCLEARS: BAND	WHITE BLOOD CELLS: LYMPHOCYTES	WHITE BLOOD CELLS: MONOCYTES	EOSINOPHILS	BASOPHILS	MYELOCYTES	UNCLASSIFIED	SEDIMENTATION RATE	ICTERUS INDEX
	×10⁶	gm	%	×10³	%	%	%	%	%	%	%	%	mm./ml	
June 15	4.4	12.5	45	8.7	67.0	5.0	19.5	9.5	3.5	0.5	0	0	0.1	8
July 29	—	—	41	4.9	66.0	28.5	11.5	22.5	0	0	0	0	0.6	—
August 15	3.3	8.8	26	3.6	55.0	19.5	33.5	10.0	1.5	0	0	0	2.0	25
August 17	2.6	7.8	—	1.6	14.0	1.0	82.0	3.0	1.0	0	0	0	—	—
August 19	3.1	9.2	—	1.9	0	0	96.0	1.0	0	0	0	3.0	—	—
August 24	3.1	10.2	—	2.2	30.0	15.0	33.0	16.0	0	0	17.0	4.0	—	—
September 8	3.8	—	—	11.3	64.0	5.5	26.5	4.0	1.0	0.5	0	0	—	—

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the abdomen on a level with the umbilicus There was loss of appetite but no nausea, vomiting or diarrhea Physical examination of the abdomen showed no masses, tenderness or spasm

On July 28 a vaginal examination was done The cervix was normal, a small amount of blood was seen in the vagina The patient had completed her menses on the previous day The vaults were tender to manual examination but no masses were felt. The white-cell count was 5600

On July 29 the patient complained of chills, general malaise and pain in the lower abdomen Vaginal examination showed marked tenderness in both vaults, more on the left, there was a copious, purulent, foul discharge from the cervix Smears of the latter showed numerous gram positive and gram negative organisms but none characteristic of the gonococcus The blood culture was negative At this time a diagnosis of acute pyogenic bilateral salpingitis was made, and sulfanilamide treatment was instituted (Fig 1) During the next 2 days the dose was 5.3 gm, and for the 3rd day 5 gm The temperature returned gradually to normal on the 4th day and remained there for the next 2 days The white-cell count rose to 6900 and the patient felt better

On August 1, 4 days after beginning the sulfanilamide, the patient complained of dyspnea Cyanosis was marked. The drug was reduced to 1 gm On August 2 the dose was increased to 2 4 gm and the cyanosis lessened markedly

On August 3 the patient complained of chills, general malaise and lower abdominal pain. The temperature was 99 4°F, the pulse 100, the respirations 20, and the white-cell count 9100 Sulfanilamide was continued with 2 4 gm daily The cyanosis did not return The patient, however, became more toxic, and had several chills, severe prostration and night sweats and continual pain in the lower abdomen The temperature remained septic (from 102 to 104 6°F) The white-cell count steadily increased to 16 500 on August 8, 11 days after sulfanilamide treatment had been begun On August 9 the high levels of temperature began to recede, but the patient was still very ill and no clinical improvement was noted On August 11 the white-cell count was 8550, and red-cell count 3,500,000, and the hemoglobin 10 gm Two days later the white-cell count was 6450 with 79 per cent polymorphonuclears, the red-cell count 3,000,000 and the hemoglobin 8 2 gm The icteric index was 30 The patient was definitely jaundiced for the first time. There was no angina. A transfusion of 500 cc of citrated blood was given. Sulfanilamide had been continued, but the dose was cut to 1 gm daily

On August 15, 18 days after beginning sulfanilamide therapy, the white-cell count was 3550, with 55 per cent polymorphonuclears, 33 per cent lymphocytes and 10 per cent monocytes The sedimentation rate was 1 0 mm per minute, and the icteric index 25 The drug was discontinued on the following day

On August 17 the red-cell count was 2,600,000, the hemoglobin 7 8 gm and the white-cell count 1600, with 14 per cent polymorphonuclears, 82 per cent lymphocytes and 3 per cent monocytes Five hundred cubic centimeters of citrated blood was given. From August 15 to 17 the temperature ranged from 97 2 to 98 6°F and the pulse from 80 to 90 The patient felt much better

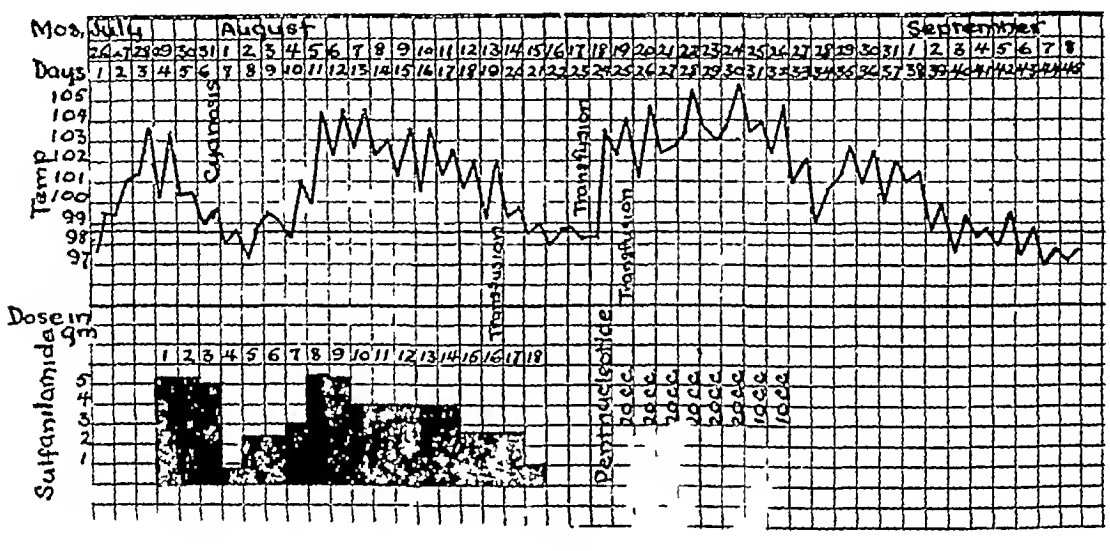

FIGURE 1

On August 18, the 21st day, the patient had a chill and a sudden rise in temperature to 103 5°F, the pulse was 130, and respirations 24 She was prostrated, sweating profusely, and for the first time complained of a sore throat. Examination of the throat revealed only a slight injection of fauces The red-cell count was 2,900,000, the hemoglobin 11 gm and the white-cell count 2600, with 1 per cent polymorphonuclears, 95 per cent lymphocytes, 1 per cent monocytes and 3 per cent unclassified A diagnosis of agranulocytosis was made and 10 cc. of Pentnucleotide was promptly given An addition of 5 cc. was given in divided doses on the same day

During the next 5 days the red-cell count and hemoglobin remained constant at about 3,300,000 and 9 5 gm., but the white-cell count dropped to 1050, the lowest point recorded during the illness During this time there were no polymorphonuclears in any smears On August 19 a third transfusion of 500 cc. of citrated blood was given. Two 10-cc. doses of Pentnucleotide were given daily Suddenly, after 6 days of absolute agranulocytosis, on August 24, the 7th day after Pentnucleotide had been first given, the differential white-cell count showed 30 per cent polymorphonuclears, 33 per cent lymphocytes and 16 per cent monocytes The total white-cell count was 2200, the red-cell count 3,100,000, and the hemoglobin 10.2 gm

From this day on there was a rapid improvement. The temperature descended gradually, reaching normal on September 3 The white-cell count rose rapidly each day,

reaching a peak of 42,400 on August 28 or 5 days after the initial rise. The polymorphonuclears also rose rapidly to 82 per cent on the 7th day The Pentnucleotide was discontinued on August 27 or 9 days after the first dose.

On September 2 the patient complained of pain in the right loin and right upper quadrant of the abdomen The impression was that a perirenal abscess was developing. However all symptoms subsided in a few days.

On September 6 the patient presented a large discharging abscess of the right Bartholin's gland which was incised and drained and healed in a few days. There after the patient had no complaints. The temperature remained normal. The blood assumed a normal picture, the last examination on November 1 showing a red-cell count of 4,600 000 a hemoglobin of 15 gm. a white-cell count of 6100 with 58 per cent polymorphonuclears 31 per cent lymphocytes 5 per cent monocytes 5 per cent eosinophils, and 0.5 per cent basophils a sedimentation rate of 0.1 mm. per minute, and an icteric index of 5

There are several phases of this patient's illness which deserve comment The relation between the temperature and the white-cell count was particularly significant As soon as sulfanilamide was given the temperature gradually came down to normal on the fourth day The white cell count meanwhile increased gradually from 4900 to 9100 The temperature began to rise again gradually for the next five days and the white cells showed a gradual increase to 16,550 and then began a steady decline, as did the temperature. The patient was very ill On three days, the eighteenth, nineteenth and twentieth days after sulfanilamide had been begun, the temperature was normal but the white-cell count fell to 1600 There was a sudden rise of temperature to 103°F on the twenty-first day The patient complained of sore throat at this time, and the white-cell count was 2600 The temperature was septic during the next eight days, during which time the agranulocytopenia disappeared and the white-cell count rose to 42,400 The temperature did not return to within normal limits until a Bartholin's abscess had been incised on the fortieth day

Accompanying the neutropenia was a moderate hemolytic anemia The initial red-cell count on June 15 was 4,400 000, and the hemoglobin 12.5 gm The lowest drop was recorded on August 17, the red-cell count being 2,600,000 and the hemoglobin 7.8 gm Transfusions of 500 cc. of citrated blood were given on three occasions

A transient jaundice lasting only two days was noted on the seventeenth day after the start of sulfanilamide therapy

In this case it will be seen that the leukocyte count began to fall on the fourteenth day after sulfanilamide was first used The fall was gradual thereafter, reaching its lowest point of 1050 on the twenty-third day The drug was continued for three days after the first drop in white cells. It should have been stopped at the first decrease even though the count was 8500 The fact that the agranulocytosis began on the fourteenth day is in keeping with Keefer's[3] statement that this complication has never been known to occur before the fourteenth day

SUMMARY AND CONCLUSION

A case of agranulocytosis following the use of sulfanilamide is described The patient recovered after discontinuance of the drug and the administration of Pentnucleotide

We stress most emphatically that patients receiving sulfanilamide should be closely watched for idiosyncrasies and toxic effects of its use with a daily study of the cellular elements in the blood

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REPORT ON MEDICAL PROGRESS

ALLERGIC DISEASES

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AS MORE information concerning the underlying principles and the mechanism of allergic diseases becomes available, diagnosis and management become easier Allergy is a very dramatic phenomenon, but nothing about it should be regarded as strange or unexpected Skin tests and a marked sensitiveness to serum are part of the picture of serum disease The patient who has recovered from pneumonia has a positive skin test to the specific pneumococcus carbohydrate Patients infected with ascaris show a positive skin reaction to ascaris extract Finally, several investigators have shown that when animals or human subjects are treated with repeated doses of some foreign protein, a positive skin reaction to that substance can be developed Allergy becomes a part of the normal process of immunity

However, hay fever and asthma are hardly normal Hill[1] says that babies first weaned to cow's milk can be shown to have a skin test to milk However, the test is transient, and if repeated in a few weeks it is in most cases no longer demonstrable On the other hand, other babies have a positive reaction to egg, and here the sensitiveness persists and expresses itself, perhaps by eczema with its characteristic distribution to face, elbows and knees Eczema of this kind is called atopic because in this baby the allergy is abnormal, it is almost permanent It depends on a factor or factors which are inherited The family histories of such children often show allergy in the relatives

Why do certain children or adults have eczema while in others the same inheritance and the same kind of exposure to foreign substances result in another form of allergy like hay fever or asthma? The answer is difficult, but the evidence indicates that certain tissues can become more sensitive than others There are patients skin-sensitive to pollen who have hay fever, — common enough, — but there are others who have no nasal symptoms and whose only complaint is asthma limited to one time of year The sensitiveness is more marked in one case in the nasal mucosa, in the other in the bronchial mucosa The process called contact dermatitis is particularly interesting because here the individual has a sensitiveness which appears to be limited to his skin The Indians knew that they could chew the leaves of poison ivy without trouble — their sensitiveness also was of the skin and not of the mucous membranes

One practical value of these observations lies in the light which they throw on diagnosis Skin tests are fallible in two directions They are sometimes positive when there is no clinical evidence that the particular substances cause trouble, and sometimes negative when the patient is obviously sensitive Now, it is thought that these negative tests depend on the fact that the patient's sensitiveness is limited to the mucous membranes. The idea is confirmed by a study of several patients who, during the first year of their hay fever, had no positive skin tests, but when studied in succeeding years were found to have skin tests of steadily increasing size Waldbott and Ascher[2] have called attention to the unreliability of skin tests in the early stages of allergic symptoms

Skin tests may be positive when there is no evidence that the patient is clinically sensitive Pearson,[3] like us,[4] has found that positive tests occur in many normal controls Rynes[5] studied 367 patients skin sensitive to various animal danders, and found only 24 per cent who were aware that animals had anything to do with their symptoms Hill[6] tested 44 eczematous babies with house dust and feathers and found many positive reactions Sometimes elimination of the dust brought improvement, but there were too many cases in which a change in pillows or a move to another house or to a hospital failed to bring relief Hill lays stress on the distinction between sensitiveness of the skin and sensitiveness of the body as a whole

The leukopenic index of Vaughan[7] has received some attention Vaughan believed that when a person ate a specific food to which he was sensitive the total leukocytes in his blood dropped, whereas after the taking of foods to which there was no sensitiveness they rose Loveless and her associates[8] tried to confirm the finding on patients known to be food-sensitive, but after a most scrupulous study (counting 800 white cells in each smear), she showed that the test was un

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iable. Perhaps the more recent suggestion by ıer and Madison[9] that the blood eosinophils rease after specific foods may prove to be a ıre helpful even if time-consuming aid in diag sis.

f skin tests are subject to discrepancies and ors, how can a diagnosis be made? Only one thod is reliable and that is the history At the sent time one is forced to lean heavily on evi nce which is circumstantial rather than direct d to check by clinical experiments the possi ities suggested by the history If one can take careful history demonstrating all the circum ances under which attacks occur, the diagnosis ll often appear Dates are essential they are curate and bold good for all time The phrase even months ago, occurring in a history writ n in February, 1934 requires a mental effort in der for the reader to place the event mentioned July 1933, and then one wonders whether ily was really correct In New England the ass pollens come in June and the ragweed sea on begins in August. The fact that an attack, r instance, occurred in "July may have a criti l significance, and the reader wonders why the tact date was not set down in the first place

Dust-free rooms are diagnostically important ven the ordinary hospital ward is often helpful r most of the extrinsic cases clear promptly there, he patient having escaped from a dust which vas causing trouble at home Incidentally we eed to know how the patient was during a vaca ion or during a business trip away from home. f he was free of his asthma the fact may be of immense practical value unless perhaps it came it a time of year when he would have been bet er anyway We must also be told the dates of he trip

If a certain food is suspected, it is easy to test the heory by eliminating it and have the patient con ine his diet to foods which are above suspicion and which can be so selected as to provide an adequate, palatable and practical diet

Active treatment of sensitiveness—desensitiza tion—is on the whole disappointing in its result, and little real progress in the method or technic has been made Typical results in hay fever are set forth in a close analysis by Clarke and Leopold[10] Specificity plays an important role, and good results require that the pollen selected for treatment shall be in fact the pollen which caused the symptoms. Treatment with horse dander will do no good if the asthma is caused by the dander of a cat. The tolerance of each individual is defined at a certain level beyond which an increased dose will produce a general reaction with increased hay fever, urticaria, asthma ab- these symptoms predominating in the particular case. The literature on constitutional reactions has been reviewed by Furstenberg and Gay,[11] and a study of the general reactions from ragweed treatment has been completed in our own clinic by Dr Jeremiah E. Greene[12]

What the treatment does to diminish the symptoms is not known so that its form is difficult to define. Whether it should begin early or late, whether large doses or small doses should be given at longer or shorter intervals, are questions still without any sure answer We have seen patients markedly benefited by three or four doses given just as the season started, and we have seen others who seemed to require an extended series of doses—fifteen or twenty The problem of technic remains unsolved

SERUM REACTIONS

The following case reported by Cohen[13] has been quoted elsewhere, but it is repeated here because it illustrates what can happen when mechanisms and symptoms which follow normally after the injection of foreign serum are overlooked

> A boy was kicked by a horse and was given antitetanus serum. On the 6th day after treatment, he developed fever and urticaria, typical of serum disease and a normal consequence of the serum On the 7th day however there occurred pain in the neck, limbs and jaws also a part of serum disease, but unfortunately a diagnosis of tetanus was made and more antitoxin was given this time intravenously Even while the injection was being made, the patient went into shock and almost died. Ten hours later there appeared at the site of the venipuncture, a bluish red sharply demarcated area, swollen and painful For 3 days, the patient was in extremis the area in the arm became gangrenous and there was complete suppression of urine. Slowly however he improved. On the 10th day he died suddenly of an embolus from a thrombosed vein.

Such a typical Arthus phenomenon would have been prevented if the symptoms of serum disease had been better understood The subject is always important and always worthy of emphasis and repetition

The treatment of serum disease with its urticaria, joint pains and fever has received little attention because, if left alone, the process rarely if ever becomes alarming or dangerous. However Foshay and Hagebusch[14] have recently found that treatment with histaminase, a preparation derived from the intestinal mucosa and having the property of detoxicating histamine, can be given both in tablets by mouth and in ampules by intramuscular injection with very favorable results.

INTRINSIC ASTHMA

All is not allergy that wheezes" In the winter of 1938-1939 a careful study[15] was made of a group

of cases in which the circumstantial evidence — the history — gave no indication of a sensitiveness to any common dust or food One rather startling fact was that, in this intrinsic group, deaths from asthma had occurred in 20 (7 per cent) of the 283 patients, whereas no deaths from asthma had occurred in a second group consisting of over 2000 patients whose asthma was extrinsic and due to a hypersensitiveness to foods or dusts or both One must mention, however, that the literature contains a few reports of deaths by accident after the injection of serums and extracts into patients who are exquisitely sensitive to them This difference in mortality between the two groups is in itself good reason to consider that the two kinds of asthma are separate. The cases with intrinsic asthma fell into several groups In some, a typical intermittent extrinsic asthma dependent on a sensitiveness, perhaps to a pollen or to an animal dander, had changed into a chronic persistent asthmatic state bearing no relation to environmental or dietary factors In others, asthma occurred only with head colds In a third group, the onset was sudden and usually after the age of forty Finally, quite a few patients developed asthma as a sort of complication to a long-standing, severe and distressing, chronic vasomotor rhinitis

There was a sub-group of these cases in which the blood eosinophils rose to a high level, --75 per cent, — and evidence of vascular disease — hemorrhages from the lung, stomach and bowel and into the skin (purpura) — was added to the picture, the diagnosis was changed to periarteritis nodosa, the prognosis was grave and 50 per cent of the patients died It is interesting that in each of the fatal cases serositis — pleurisy and pericarditis — developed The report of them concludes "When asthma of great severity is accompanied by a high blood eosinophilia and by pains and numbness in the extremities, the probable diagnosis is periarteritis nodosa"

In all these intrinsic cases, it has seemed proper to regard the asthma as part of a syndrome characterized by asthma, nasal sinus disease, eosinophilia and the peculiar malaise referred to as "allergic toxemia" — the condition as a whole being dependent on a hypothetical x factor The idea was suggested by the literature on sinus disease in asthma, which is voluminous and controversial Operations on the sinuses in chronic asthma yield results which are good for a time but almost always disappointing in the long run Thus, about a third of all our own patients had already had one or more sinus operations before applying for further treatment, and about a half were found to have sinus lesions, varying from a pansinusitis to thickened membranes, with or without nasal polyps, at the time of examination It seemed certain that the great frequency was in itself evidence that the sinusitis was a part of the picture and not a cause of it Local treatment given with caution, so as to disturb the normal structure and function of the nose as little as possible, will do good The removal of polyps and the clearing of the nose by suction of the sinus secretions may be helpful although such treatment may have to be repeated often What ever will stop the postnasal drip will benefit the tracheobronchitis

Autopsies on patients who die of asthma without heart disease or pneumonia are uncommon but the picture is always striking The bronchi are found to contain an exudate of peculiarly tough, sticky material which fills the lumen, protruding above the cut surface, so that it can be grasped with forceps and pulled out in long shreds. No wonder the patient coughs and later literally suffocates In the pharynx, a similar exudate may form either as a rope or as a thin veil over the pharyngeal wall, and if this can be pulled away by suction, the relief may be great

What is the *x* factor in the background which sets the stage and explains why asthma occurs after such a variety of exciting causes as head colds, emotional stress, exposure to cold, fatigue or f ly allergy? Why should histamine be regarded as the active end substance which results from many kinds of reaction and is, therefore, the immediate cause of asthma? There are several reasons First, histamine is a normal constituent of the body cells and is released easily by injury to these cells (Sir Thomas Lewis[16]) Second, injection of histamine in persons subject to asthma induces an attack (Weiss, Robb and Ellis[17]) Third, histamine injected into guinea pigs causes symptoms like anaphylactic shock Do patients have an excess of histamine in their systems, or are they deficient in the normal mechanism by which histamine is destroyed? Active work on these problems is going on in many clinics, with varying results Meantime, other chemical effecters, such as acetylcholine, will be investigated, and the time may come when the treatment of asthma of what ever cause will be reduced to a fairly simple basis.

TREATMENT

In the meanwhile our patients need help, and treatment is important The vitamins have been considered, but so far there is no valid evidence that they are concerned with the cause of asthma or that the feeding of them is helpful in treatment Potassium chloride was first suggested by Rusk and Kenamore[18] as a treatment for urticaria, on the theory that an imbalance of potassium

ays a part Epinephrine increased the potas im content of the blood serum, and potassium ts when injected intravenously had an effect mparable to that of adrenalin These authors oposed in chronic urticaria a potassium regime th a diet low in sodium salts and high in meat d vegetables, and with potassium chloride given doses as high as 6 to 10 gm per day This ethod might well be applied to some patients ith chronic asthma, and reports of such treatment e appearing Rusk et al [19] find that the serum po ssium is increased in asthma They explain that allergy the body cells are depleted of their potas um, which appears in the blood The feeding f more potassium offsets the deficiency

For acute attacks of asthma there are several medies which are relatively new In 1938 Kee ey[20] advocated "slow epinephrine"—a suspension f powdered epinephrine in peanut oil The oil rovided for slow absorption and thus the effect f the drug was prolonged The material is now vailable commercially It is apt to produce local eactions of considerable size. In a recent article keeney, Pierce, and Gay[21] discuss the results in ractice, and report them as good

Theophylline with ethylenediamine (amino hylline) is a purin compound which has been used s a diuretic in cardiorenal disease and now ap ears to be useful in asthma as well The details oncerning its application are described by Herr mann and Aynesworth [22] In several of our cases the contents of an ampule containing 0.20 gm n 10 cc. of water, injected intravenously has brought marked and prompt relief to the parox ysms.

Helium and oxygen are advised by Barach,[23] who has written extensively on the method of ad ministering the gases A convenient apparatus is the Boothby Lovelace Bulbulian[24] (B-L-B) mask, which fits over the nose, leaving the mouth open enough for eating, drinking and talking The gas mixture contains 20 per cent oxygen and 80 per cent helium, and its effect depends on its very low specific gravity compared with that of air By suitable valves, tanks of helium-oxygen and of pure oxygen are connected to the mask so that as the patient improves more and more oxygen and less and less helium can be used Barach asserts that the treatment helps to rest and soothe the local bronchial irritation His patients are given inhalations at intervals during their convalescence. Maytum[25] describes the use of the method at the Mayo Clinic

Bronchoscopy may be lifesaving The sticky character of the exudate has been referred to above The symptoms depend largely on this exudate, and its removal should cause prompt relief Some au thorities advocate the instillation of iodized oil at the time of bronchoscopy This makes possible a further study of the lungs by x-ray, and the oil is said to have healing properties, but Flamm[26] reports 2 cases in which the oil became a true foreign body and the later situation was bad.

Finally, a word should be said about drug al lergy Most patients with severe asthma are sensitive to aspirin one of our patients almost died from a 5 gr pill Many are sensitive to mor phine, and we have learned to be extremely cau tious in giving it to patients with severe asthma Barbiturates are in the same class. Sensitiveness to them is easily acquired and several cases of ours were made far worse by such drugs as phenobarbital and Pentobarbital.

Unfortunately there is no test for drug allergy Codeine always gives a positive skin reaction, but in all our patients with violent general sensitive ness to aspirin the skin test has been negative. So far the only way to determine sensitivity has been to use the drug, but the trial has not always been safe or easy Atropine should theoretically be very helpful, but its practical results are disappointing Our present plan is to use only those drugs which have a very simple chemical formula. The bromides, paraldehyde and chloral hydrate are all useful and appear safe. The injection of salt solution, a liter or more intravenously with the addition of 5 or 10 per cent glucose, may be extremely helpful to patients who are dehydrated, sweating and toxic, and if necessary, 1 or 2 cc of a 1 1000 solution of adrenalin can be added to the solution but it must be mixed thoroughly with it. Finally ether and olive oil by rectum is sometimes needed Kahn[27] recommends a mixture of equal parts and injects from 150 to 200 cc. The general anesthesia which results is almost complete An excellent paper on emergency treatment in asthma is that by Waldbott [28]

* * *

It is the writer's opinion that progress in allergic diseases will become more advanced when the problems of allergy and of asthma are separated Allergy is a phase of immunity and must be studied by immunological methods, with due regard to modifications produced by dietary and endocrine disturbances Asthma is a problem of physiology and of pathology In some cases, the hypersensitiveness of allergy appears to be an adequate explanation of the whole picture but in many other cases, allergy falls short of the answer and whereas new conceptions are being offered and considered no one of them so far is good enough Real progress in allergic disease awaits a discovery of the first magnitude

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SE RECORDS OF THE SSACHUSETTS GENERAL HOSPITAL

ANTEMORTEM AND POSTMORTEM RECORDS AS USED IN WEEKLY CLINICOPATHOLOGICAL EXERCISES

FOUNDED BY RICHARD C. CABOT M.D.

TRACY B MALLORY, M.D., *Editor*

CASE 25321

PRESENTATION OF CASE

rst Admission A seven month-old boy was ught into the hospital in July by his mother use the baby was undernourished and feeble he parents were well. The patient was the igest of twelve children, seven of whom were g The family history was negative for syph tuberculosis, heart trouble or familial dis

rth was normal at term He appeared a healthy He was not breast fed, but received formulas vaporated milk, water and Karo syrup up to in one week of entry to the hospital Cod oil and orange juice had never been given one week previous to admission The baby ed to do well and gained weight until three ths old, since then his weight had been prac y stationary He had had no infections or ointestinal disorders His appetite was good, there was no pica He held up his head our months but was unable to sit without ort at seven months

ysical examination showed an alert mentally e, pale, feeble looking baby The muscle tone poor, and subcutaneous fat was conspicuously nt. There were no teeth The wrists were not ged The head was of normal circumference cm.) and the length of the body 61.3 cm mal, 65.0 cm.) The abdomen was protub- ; and a Harrison s groove was present The was not believed to be enlarged A blowing lic murmur was heard all over the cardiac but best at the apex. The spleen and liver palpable one fingerbreadth below the costal gin

ie blood examination showed a white-cell count 2,700 with 44 per cent polymorphonuclears, a red-cell count of 4,510,000 with 50 per cent oglobin, 52 per cent lymphocytes and 3 per cent ocytes. The red cells showed some hypo- mia. The urine was normal, the stools nor

A tuberculin test was negative The blood on test was negative An electrocardiogram ed a diphasic QRS complex and an inconstant ted T_1 X-ray examination of the chest ed no evidence of scorbutic beading of the ribs The heart was increased in size and abnormal in shape, the right side being particularly prominent At expiration the heart assumed a more normal shape.

The child was given a formula of whole milk water and cane sugar, and plenty of thiamine chloride, ascorbic acid and cod liver oil. Elixir of ferrous sulfate was also given The solid food included cereal bananas, toast and vegetables The hemoglobin rose to 70 per cent, but in spite of getting 50 or 70 calories per pound a day, his weight in eight weeks increased only from 11 pounds, 2 ounces, to 11 pounds, 5½ ounces. He took his food well and showed no evidence of indigestion Two basal metabolism tests done one week apart were reported +63 and +49 per cent Mentally he stayed alert but did not increase his voluntary activity The heart murmur persisted There were no eye signs or tremor, and the thyroid gland was not palpable. Potassium iodide, 3 drops daily had no effect on his weight. He was discharged to a convalescent home eight weeks after entry

Second Admission (two months later) At the convalescent home he gained 2 pounds He was in the hospital another three weeks without gain in weight His basal metabolism was +42 per cent The hemoglobin was 70 per cent, and the white-cell count 11,000 The child s nutrition seemed better The size of the heart was unchanged or slightly smaller A cardiac consultant reported marked cardiac enlargement, a harsh systolic murmur and thrill at the left of the lower sternum and a blowing systolic murmur at the apex T_1 was no longer inverted He was discharged in three weeks

Third Admission (twelve days later) The child was re admitted because of apparent pain and a temperature of 104°F Physical examination disclosed a red throat and rapid, regular respirations Examination of the ears was negative. The lungs were clear X-ray films showed no change in the size of the heart A white-cell count was 18 000 with 47 per cent polymorphonuclears The temperature fell in eighteen hours and remained normal. The child was sent home after one week in the hospital

Final Admission (three months later) He had been seen in the Out Patient Department for colds and had gained 12 ounces during this period He was said to have cried considerably and was believed to have been spoiled Three days previously he contracted a slight cold On the day of admission he became very sick developing a cough, mucus in the throat and noisy wheezy respirations

Physical examination showed him to be cyanotic,

restless and breathing rapidly Rhonchi were heard over the chest, obscuring the heart sounds The liver was three fingerbreadths below the costal margin The temperature was 103°F, the pulse 200, and the respirations 100 The white-cell count was 11,000 He was put in an oxygen tent but died a few hours after admission

Differential Diagnosis

Dr Eli C Romberg This is a rather complicated case with a few facts that are disturbing I do not know whether this is a recent or old case because here we have a family of twelve children which so rarely occurs now I think we have to discuss, then, a child who at seven months of age has the weight of a two- or three-month-old infant, who is feeble and does not gain in weight in spite of apparently properly digested food and no history of diarrhea or vomiting and who presents, as his chief abnormalities, a large heart with murmurs that have been described and a basal metabolic rate that persistently ran high

Before I discuss the heart, which seems to me the most important feature in this case, I want to consider the significance of the high metabolic rate which this infant showed It states that the metabolic rate varied from +42 to +63 per cent I do not know whether it was computed on the basis of the weight and height of the infant These facts must be considered I bring up the question of metabolism now because this was a child who had not gained in spite of a sufficient caloric intake Hyperthyroidism in infancy is extremely rare I think the youngest I have seen verified by operation was five years of age, but there are several cases of hyperthyroidism in infancy that have been reported Dr Paul D White describes one in very early infancy and another case at about nine months of age How, then, can we explain the high metabolic rate? The child had no tremors, no extraordinary palpitation, no nervous symptoms or no exophthalmos, and many other findings are against hyperthyroidism I personally do not think that this child had hyperthyroid disease We do find, and I think Dr Higgins will bear me out, that in certain poorly nourished children and sometimes in premature infants a high metabolic rate may be found without having hyperthyroid disease present On that basis I am going to dismiss the high metabolic rate as evidence of thyroid disorder and assume that it has no diagnostic significance in a child who is markedly underweight and has a marked circulatory disturbance

The heart showed a murmur that was systolic in time and heard all over the chest There was right-sided hypertrophy The size of the heart and the character of the murmurs could be plained on the basis of a mitral regurgitation, cept that this was a child who was perfec healthy and was suddenly found to have a lo murmur as described without any history of rh matic fever or any other sudden infection t might bring about this condition Dr White recorded cases of intrauterine mitral involvem or mitral lesions that have been discovered arou one or two years of age However, because subsequent findings and because of the age of child I shall not consider the possibility of a mit lesion

What lesion can this be? The most likely one due to a congenital heart One of the co monest conditions in children is a patent int ventricular septum, but such a lesion does ordinarily give an enlarged heart There may some enlargement but not the conspicuous rig sided enlargement here described The murm at least as described, was maximum at the ap Ordinarily the systolic murmur of a patent interv tricular septum does not have its point of maxim intensity there It is nearly always found ma mum substernally near the third or fourth int space We see many cases of interventricular s tal defects in infants and children, but most these patients are symptomless and are only covered in the course of an examination So th must have been some superimposed complicat factor

What other conditions can give an enlar hear in children? I shall just mention a and discuss them briefly I imagine that t thought of Von Gierke's disease, described in 19 this condition is essentially due to a carbohydr metabolic disturbance with a storing of glyco in the heart, liver or kidneys, giving the hepa nephromegalic type or the cardiomegalic type they probably suspected here In this condit you have a patient, normal at birth, with a retar tion of development, difficulty in feeding, and we ness of the muscles He does have frequent re ratory infections, and these may be the ca of the death X-ray study shows a greatly larged heart, spherical in shape, and this see to fill the entire left cavity He has a second anemia of the hypochromic type and a slightly vated leukocyte count, with a tendency to leu cytosis On the ward they probably did not th much of this possibility because they did not port some of the confirmatory tests that are u ally done, such as sugar tolerance tests and th to measure the blood-sugar response to injecti of epinephrine and to determine any disturba in pancreatic function This possibility, howe can be dismissed for the heart does not app

o be eolarged in the proper way and other find ngs are contradictory

The child did not have any added vitamins in he diet so one could consider the possibility of ivitaminosis Later, however, the child was given lenty of thiamine chloride, ascorbic acid and cod iver oil and apparently did not improve.

I believe the most likely cause of this condition s congenital heart disease, and I suspect in volvement of the pulmonary artery as at least par ial explanation of the right sided hypertrophy Sudden terminal tricuspid insufficiency might iccount for the sudden increase in the size of he liver and the abdominal pain as described iere I am sure that if the patient did have an nterventricular defect it was not very extensive.

Dr. Harold L. Higgins Every once in a while we see a baby that eats well and digests its food perfectly but still does not gain in weight. This baby fell into that group He was a very thin child. In these cases we have found the metabolism increased sometimes to as high as +80 per cent, based on the height and weight standards This condition as a rule is outgrown about the time the babies are a year of age, when they start to gain in weight normally This baby however, had an added complication, a congenital malforma tion of the heart. I was of the opinion that there was a patent interventricular septum with hyper trophy of the heart, as a result of the respiratory infection, the heart decompensated and the child died

Dr. Edward F Bland I saw this child on the first admission, but not during the subsequent course The child was feeble and poorly nour ished One thing that struck us was the marked secondary anemia Another striking finding was the degree of enlargement of the heart together with the loud systolic murmur At that time we were not quite willing to decide whether it repre sented an uncomplicated congenital lesion or whether the dilatation and murmur were in part secondary to the malnutrition and anemia We considered both possibilities, with an interven tricular septal defect as the most likely congenital anomaly

The child apparently died of a severe infection The heart had done its job fairly well until the last episode, which brings up the possibility of a terminal bacterial endocarditis

Clinical Diagnoses

Acute upper respiratory infection
Congenital malformation of heart

Dr Romberg's Diagnosis

Congenital heart disease
? patent interventricular septum

Anatomical Diagnoses

Congenital anomaly of the heart patent inter ventricular septum tricuspid insufficiency
Hypertrophy of the heart.
Bronchopneumonia
Malnutrition

Pathological Discussion

Dr. Tracy B Mallory The autopsy on this child showed a very considerably enlarged heart, and the main defect in it was a patency of the in terventricular septum There was a hole nearly 2 cm in diameter There was one other finding, however which may perhaps have been of some importance and help to explain the unusual en largement which bothered Dr Romberg in this case One of the leaflets of the tricuspid valve passed through the interventricular septum and was anchored in the left ventricle instead of the right, pulling one leaflet tight against the ven tricular wall and appearing to produce an incom petent tricuspid valve as well as the interven tricular septal defect

The terminal event was an extensive bronchitis with beginning pneumonia and quite a bit of atelectasis, as is usual in children Whether the bronchitis alone was responsible for the severe terminal cyanosis or whether this child developed a sudden shunt from the right side of the heart over to the left as frequently happens, cannot be decided on anatomical grounds. There was cer tainly no abnormal glycogen deposit either in the heart or liver and von Gierke's disease can be ruled out.

Dr Higgins Does this explain the enlargement of the liver—provided it was enlarged?

Dr. Mallory The liver was moderately en larged, I assume from the acute passive conges tion of the terminal episode

In my opinion one possibility to regard to an elevated metabolic rate in patients with cardiac lesions always has to be considered. There may be a considerable degree of anoxemia, inadequate to show up as cyanosis but nevertheless great enough to use up quite a little oxygen in bring ing the hemoglobin saturation up to normal If you do not make allowance for that by keeping the patient in a high oxygen atmosphere for some minutes before beginning to measure the oxy gen consumption you may get a falsely elevated metabolic rate

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CASE 25322

Presentation of Case

First Admission A forty-two-year-old Ameri can housewife was admitted to the hospital com plaining of an abdominal tumor and abdominal

The patient was apparently well until twenty-eight months before admission when she noted the onset of attacks of vague non-radiating, moderately severe pain, located in the right mid-abdomen, and unassociated with food, bowel habits or the menses At their inception these attacks lasted for a minute or more, then increased in length until sixteen months before entry when they persisted for one week or more at a time Five months before entry she had noticed a mass in the abdomen and had consulted a physician, who explored her abdomen and removed a piece of tissue for examination, the result of which she never heard Following this operation she stated that she felt as though she were pregnant, she suffered frequent gaseous eructations, nausea and occasional vomiting of recently ingested food She had never had bloody or tarry stools She had lost about 50 pounds in weight The family, marital and past histories were noncontributory

Physical examination revealed a well-developed, pale, very anemic woman There was a lower abdominal right rectus scar The right side of the abdomen was enlarged by a mass about 20 cm in diameter, oval in shape, with one end appearing under the right rectus scar and the other in the right costovertebral angle The mass seemed to be just beneath the abdominal wall, was hard, smooth and tender in places and did not move with respiration It could not be moved manually The rectal examination was unsatisfactory because of painful external hemorrhoids Pelvic examination revealed the uterine fundus to be enlarged to the size of a large grapefruit by what appeared to be fibroids It was freely movable The fundus was pushed to the left and the cervix to the right by the abdominal tumor There did not seem to be any connection between the tumor and the uterus

The blood examination showed a red-cell count of 2,600,000 with 60 per cent hemoglobin, and a white-cell count of 8100 The urine and stool examinations were negative X-ray examination showed a large mass extending into the lumen of the cecum and ascending colon

A resection of the cecum and ascending colon with lateral anastomosis between the terminal ileum and transverse colon was performed There was no evidence of metastasis to the liver, though the growth had infiltrated into the muscles of the back The pathological report on the specimen was colloid adenocarcinoma Following this her postoperative course was uneventful and she was discharged three weeks later

Second Admission (thirteen years later) Six months after discharge the patient completed a series of x-ray treatments consisting of 400 r to the pelvis, both anteriorly and posteriorly Three years later a gastrointestinal series and barium enema were negative The following year she was seen in the medical outpatient department and given a diet for weight reduction because of obesity and hypertension A Graham test was positive Four years before entry, pain in the inner quadrant of the right breast was diagnosed as being due to chronic cystic mastitis Two years before admission she was seen in the Tumor Clinic and a 5-cm hard, tender mass palpated in the left lobe of the liver just to the right of the mid line A Graham test was refused One year later the mass previously described seemed to be along the ensiform rather than in the liver She complained of nausea and vomiting after breakfast and a low backache over the right sacroiliac region which was increased by standing and relieved by the application of a supporting belt

Two months before admission she had a sudden recurrence of nausea, vomiting and intense pain in the right sacroiliac region and in the right lower quadrant The attack lasted five or six days A mass was palpated in the right lower quadrant Following this episode she felt better and had only occasional twinges of pain She carefully avoided fatty and fried foods and took bile salts when distressed

Physical examination revealed a well-developed obese woman in no acute distress A very tender irregular firm mass filled the entire right upper quadrant There was exquisite tenderness in the region of the gall bladder The blood pressure was 110 systolic, 60 diastolic

The temperature was 99 6°F, the pulse 96, and the respirations 20

The urine examination was negative The blood showed a red-cell count of 4,100,000 with 70 per cent hemoglobin, and a white-cell count of 8200 X-ray findings revealed the presence of a large tender mass measuring approximately 15 by 8 cm which filled the lateral side of the abdomen The amputated tip of the colon appeared to be infiltrated with tumor

On the twelfth hospital day an operation was performed

X-Ray Interpretation

Dr Richard Schatzki The original films of thirteen years ago are no longer available Here are some films taken nine years ago which show that the right side of the colon had been amputated, with the anastomosis between the ileum and colon near the hepatic flexure Finally, these are the films which were taken on the last admission At first glance you wonder where the big mass is that was described in the report, but when you

closely you see that there is something wrong
e region lateral to that in which the ascend
olon would be if it had not been resected
e is a large soft tissue mass which must
bulged outward in the flank and there seems
definite evidence of involvement of the oper
stump by this mass

Differential Diagnosis

Marshall K Bartlett As a starting point
ave a patient who had a tumor removed
en years before admission the nature of
h we know from the pathological report to
olloid adenocarcinoma She was readmitted
en years later, with a large firm tender mass
e right side of the abdomen There are two
ions that we have to decide first, whether
nass is inflammatory or neoplastic, and second
it is a neoplasm, whether it is a recurrence
e old growth or a new tumor Looking over
symptoms in the interval between admissions
find that she was well for a long time, so
as symptoms referable to the abdomen go
en years after her operation the tumor which
noted to the right of the midline and thought
e in the liver was first observed That would
wo years before admission The next note
year later at which time she began to have
ptoms of nausea and vomiting The interest
features are the intermittent nature of the
in the right sacroiliac region and the attacks
nausea and vomiting Looking back to the
before the first admission those are exactly
symptoms that she had then, and they are
ne same Intermittent character Apparently the
lerness of this mass at the last admission was
ry striking feature and naturally makes one
nder the possibility of something besides neo-
m Again it is noteworthy that the mass
d at first admission was also tender It seems
ne that with a known diagnosis of neoplasm
teen years before, with a recurrent mass in
same general region and with the x ray sug
ing involvement of the stump of the bowel it
very difficult to consider this anything but a
plasm
Must it be a recurrence of the original neoplasm?
ere is an interval of thirteen years between
missions, and an interval of eleven years before
mass was first noted in the region of the liver
cause of the long duration of symptoms before
first operation I think it is fair to assume that
s was a slowly growing neoplasm Sixteen
nths elapsed between the biopsy that was done
tside and the operation that was done here
d yet even with that long interval the growth
s still locally operable with no evidence of metas
tasis I should think with that evidence of slow
growth it is reasonable to assume that the tumor
might progress so slowly that it would be eleven
years before a recurrence would be noted and
on that basis I think it is more logical to assume
that this was a late recurrence of the original
neoplasm rather than a new tumor appearing in
some other organ

Dr Richard H Sweet Dr Daniel F Jones, with
an enormous background of experience, used to
make the statement that colloid carcinoma always
recurred and knowing that this tumor was slowly
growing there is some evidence in favor of what
Dr Bartlett has said

Clinical Diagnosis

Recurrent adenocarcinoma of colon

Dr. Bartlett's Diagnosis

Recurrent colloid adenocarcinoma of colon

Anatomical Diagnosis

Recurrent colloid adenocarcinoma

Pathological Discussion

Dr. Tracy B Mallory At the final entry this
patient was re-explored by Dr Edward L. Young
who found a very extensive recurrence associated
with perforation of the bowel sepsis of the ab-
dominal wall and various fistulous tracts running
in several directions It would have been quite
impossible to remove it without taking out two
thirds of the lateral abdominal wall and possibly
even the right kidney He backed out without
attempting to do anything but a biopsy The liver
was still free from metastasis sixteen years after
the time that we may assume that the cancer started
I think that even at the time of the original oper
ation some surgeons less courageous than the oper
ator Dr Lincoln Davis, might have questioned
whether it was worth resecting the bowel in
asmuch as there was fairly extensive invasion of
the posterior abdominal wall at that time Yet
she gained eleven years of excellent health from
that operation proving that it was thoroughly
justified

Dr. John D Stewart Did the local sepsis take
the form of a definite abscess?

Dr Mallory There was a large irregular ab-
scess

Dr Arthur W Allen Is it not very unusual
to have colloid carcinoma remain quiescent as long
as this one did?

Dr Mallory I should say so I cannot re
member any other case with such a long interval
before recurrence

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A WARNING!

WHILE it appears likely that the indictment engineered by the United States Department of Justice and served against the American Medical Association, three other medical societies and twenty-one individual physicians for alleged violation of the Sherman Anti-Trust Act will not be upheld if carried to the Supreme Court, the fact that a governmental agency saw fit to sponsor such an indictment offers food for thought regarding the activities of organized medicine

There can be no doubt of a national trend toward "socialization", by this we do not mean socialism, but rather social security or an improvement in conditions which affect the physical and mental welfare of *all* the people National and state legislation to this end has been passed, additional changes have been proposed, and undoubtedly the people — the voters — will demand even more Just how far this can be carried in these United States without destroying the basic fundamentals that have been responsible for the unusual, even unprecedented, normal prosperity of the country, remains to be seen It must be acknowledged, however, that many, but not all, of the changes and reforms have been long overdue.

In most sections of the country this does not apply to the general problem of medical care, if this can be judged by comparing morbidity and mortality statistics with those of other countries. Nevertheless no one can deny that the people in certain areas are not provided with adequate medical and hospital facilities, — either in the quantitative or qualitative sense, — that sickness creates a great economic burden and that the potential improvements in public health that can be gained through the application of proper steps in preventive medicine are enormous The relative importance of these inadequacies and possibilities has undoubtedly been increased by the activities of a social-security-minded administration In spite of the fact that they have existed for many years, they are, at the moment, of enough importance to be worthy of even political cognizance

Much remains to be done to improve a system of medical care which is acknowledged to be as good, if not better, than that in any other country of the world When, as and if we, as physicians, are called on for suggestions as to how these various changes or additions had best be made, let us not open up the possibility of just criticism by denying their need and let us so govern ourselves, now that we have been judged to practice a "learned profession," that we shall never again be accused of engaging in a trade!

SPEAKING OF HOT DOGS

THE shouting and the tumult have died away; the captains and the king, and the queen, too, have

arted, leaving behind them on both sides of the rnational Boundary Line the recollection of a nous couple doing their bit in the interests of nocracy and amity and comity among English aking peoples Which, in the words of the sort of a New York mayor on another occa when a royal pair was being greeted, is a nthful.

nternational amity and comity are perhaps of e general than medical interest, although the fession, too, has its mundane curiosity and scans headlines with equal avidity and even greater e than the less intellectual (*sic*) fractions of population When it comes to a matter of the l diet, however, we reach a topic on which, mutual interest, physicians may philosophize kings may cogitate.

he gastronomic high point of their Britannic esties tour of good will was undoubtedly hed on that lawn along the Hudson where, le a nation waited, they first ate hot dog When g bites a man, that s to be expected When onarch bites a dog, that s news We wonder e band struck up God Save the King" It s thing to think of, in these August dog days.

dependence of thought and action in a land ie free and a home of the brave must surely ecure under a leader who has the personal in ndence not only to elevate a Frankfurter to Supreme Bench but even to serve one, piping and presumably dunked in mustard, to the eror of India. Perhaps our motto should be ged to *Cave canem*

e can find no common meeting ground with e of our fellow countrymen — and there were rently many of them — who found it possible ke the whole episode seriously Actually, ex for its possibilities in the way of disturbed entation, the occasion provided the proper de of relief from an early June heat wave and vere attack of hero worship It proved that, ite silk hats, morning coats and admiral s orms, "a man s a man for a that"

MASSACHUSETTS MEDICAL SOCIETY

SECTION OF OBSTETRICS AND GYNECOLOGY*

RAYMOND S. TITUS M.D., *Secretary*
330 Dartmouth Street
Boston

ACUTE INVERSION OF THE UTERUS

Mrs R H., a twenty-six year-old primipara at term entered the hospital in labor on January 11 1918 After nine hours of labor she was delivered normally of a female child weighing 5 pounds, 11 ounces.

The family history was not obtained The patient gave a history of measles and mumps in childhood, no operations had been performed

Physical examination on admission showed a well-developed woman with an enlarged abdomen that corresponded in size and appearance to that of a full-term pregnancy The lungs were clear and resonant, and the heart sounds were regular at the rate of 84 per minute. There were no murmurs Pelvimetry showed the measurements to be within normal limits. The fetal heart rate was 134 per minute, and the fetus was in LOA position The blood pressure was 120 systolic, 80 diastolic.

Following delivery the patient had a slight post partum hemorrhage due to partial separation of the placenta which was expressed after several manipulations by the Credé method At this time the pulse had increased to 160 and the patient appeared to be in a moderate shock. Following a hypodermoclysis of 500 cc. of normal saline solution the pulse dropped to 140 Four hours later the patient had a small vaginal hemorrhage of approximately 150 cc.

During the next three days her condition gradually improved except for urinary retention and a daily afternoon temperature of about 103°F An intrauterine douche was advised and on attempting to insert the douche nozzle, a large mass, the size of a fist, was found presenting at the vulva It was tender to touch and sloughing The odor was extremely foul A finger could be passed around the mass, but no cervical canal could be found although there was a dimple on either side of the mass. The vagina was douched with warm sterile water and the condition was diagnosed as an acute inversion of the uterus.

A series of selected case histories by members of the section will be published weekly Comments and question by subscribers are solicited and will be discussed by members of the section

On the fifth postpartum day an attempt to replace the uterus per vaginam under ether anesthesia was unsuccessful The patient went into shock and was given the usual shock therapy

The following day another attempt at replacement from below was unsuccessful The abdomen was then opened and an attempt was made to stretch the cervical ring from above and to push the fundus up from below This also was unsuccessful The posterior vaginal wall was then incised, and the uterus pushed up through the incision and excised Drains from the pelvis were placed in the vagina and through the abdominal wall

The patient did well for eight days Then the legs began to swell, the abdomen became distended, and she developed the typical signs and symptoms of peritonitis She died on the fifteenth postoperative day

Comment Undoubtedly the inversion occurred at the time of delivery, and the usual dimpling of the fundus was not appreciated Had a vaginal examination been made, the condition would have been diagnosed at a time when reposition by vaginal manipulation could have been done successfully It is probable too that a vaginal operation such as that described in the case reported in the *Journal* on July 6, 1939, would have resulted in successful reposition without the need of entering the abdominal cavity The uterine sepsis possibly would have taken care of itself once the fundus was replaced and normal circulation re-established The swelling of the legs was undoubtedly due to a pelvic phlebitis and peritonitis This case emphasizes the seriousness of inversion when the condition is not recognized and treated immediately

DEATHS

EMARD — George Adelbert Emard, M.D, of Mansfield, died August 3 He was in his fifty-eighth year

Born in Quebec, he graduated from Tufts College Medical School in 1918 Dr Emard had served on the staff of the Sturdy Memorial Hospital, North Attleboro, for ten years

Dr Emard was a member of the Massachusetts Medical Society and a fellow of the American Medical Association

His widow survives him.

IRWIN — Vincent J Irwin, M.D, formerly of Springfield, died at Tampa, Florida, on June 19 He was in his eighty third year

Born in Holyoke, he received his degree from the University of Vermont College of Medicine in 1896 Dr Irwin was a retired member of the Massachusetts Medical Society, a member of the American Medical Association and the American Academy of Ophthalmology and Oto-Laryngology

His widow, a son, brother and sister survive him

LORING — Benjamin T Loring, M D, of 186 Mt. Auburn Street, Watertown, died July 29 He was in his seventy-first year

Dr Loring received his degree from Boston University School of Medicine in 1898 He held memberships in the Massachusetts Medical Society and the American Medical Association

MISCELLANY

RÉSUMÉ OF COMMUNICABLE DISEASES IN MASSACHUSETTS FOR APRIL, 1939

DISEASES	APRIL 1939	APRIL 1938	FIVE YEAR AVERAGE*
Anterior poliomyelitis	1	0	1
Chickenpox	721	1300	1154
Diphtheria	11	16	26
Dog bite	960	959	919
Dysentery, bacillary	7	14	4
German measles	96	104	1934
Gonorrhea	355	399	455
Lobar pneumonia	610	540	561
Measles	4068	1437	4256
Meningococcus meningitis	4	7	16
Mumps	709	1109	1021
Paratyphoid B fever	0	6	8
Scarlet fever	770	1641	1211
Syphilis	423	516	495
Tuberculosis, pulmonary	245	443	325
Tuberculosis, other forms	31	48	36
Typhoid fever	8	2	5
Undulant fever	2	2	3
Whooping cough	802	421	872

*Based on figures for preceding five years

RARE DISEASES

Anterior poliomyelitis was reported from Cambridge, 1, total, 1

Anthrax was reported from Lynn, 1, total, 1

Diphtheria was reported from Boston, 2, Brockton, 1, Canton, 1, Lawrence, 3, Salem, 2, Springfield, 1, Winthrop, 1, total, 11

Dysentery, bacillary, was reported from Wellesley, 5, Wrentham, 2, total, 7

Infectious encephalitis was reported from East Longmeadow, 1, New Bedford, 1, total, 2

Malaria was reported from Boston, 1, Cambridge, 1, Winthrop, 1, total, 3

Meningococcus meningitis was reported from Manchester, 1, Melrose, 1, Stoneham, 1, Wilmington, 1, total, 4

Septic sore throat was reported from Belmont, 2, Boston, 4, Braintree, 1, Brookline, 1, Cambridge, 2, Fall River, 5, Gardner, 2, Lexington, 1, Malden, 2, Medford, 1, Newton, 2, South Hadley, 1, Stoneham, 2, Topsfield, 1, Walpole, 1, Watertown, 1, Westport, 1, total, 30

Trachoma was reported from Boston, 3, total, 3

Typhoid fever was reported from Boston, 1, Erving, 1, Marlboro, 1, Orange, 1, Revere, 1, Springfield, 1, Taunton, 1, Waltham, 1, total, 8

Undulant fever was reported from Attleboro, 1, Brockton, 1, total, 2

Diphtheria showed record low incidence except for 1937, which was equaled.

Measles, German measles, scarlet fever, whooping cough, mumps and chickenpox were reported below the five year average.

Meningococcus meningitis showed record low figures.

Lobar pneumonia and typhoid fever were reported above the five-year average.

Pulmonary tuberculosis was reported at a record low figure.

uloss (other forms) continued to show low inci-

cidence of undulant fever was not remarkable. rabies showed record low incidence for the fifth re month.

NEWS

NOMINATING COMMITTEE REPORT

ominating Committee, composed of Drs. F B. airman J C. Oram, S. H. Kagan, E. M. H. L. Apollonio and R. V Bliss made the fol ominations at the meeting of the House of Dele he Maine Medical Association, June 26 at Poland Maine, which were duly confirmed

STANDING COMMITTEES

Committee

S. Greene, chairman	Lewiston
Scribner	Bangor
ner Warren	Portland
Weymouth	Farmington

e on Medical Education and Hospitals

Leighton, chairman	Portland
Foster	Portland

dvisory Committee

Robinson chairman	Portland
Woodcock	Bangor
Young	Skowhegan
Bunker	Calais
Jameson	Rockland
Jackson	Houlton
Ames	Bangor

ecretary ex-officio

: Committee

resident, ex-officio, chairman	
resident-elect, ex-officio	
Bliss	Bluehill
n Steele	Lewiston
Nickerson	Greenville

lations Committee

n Kershner chairman	Bath
Hill	Waterville
Knowlton	Bangor
Kinghorn	Kittery
Ellingwood	Rockland

mmittee

Ames, chairman	Bangor
s Ridlon	Bangor
Risley	Waterville
n Holt	Portland
Belliveau	Lewiston

: on Social Hygiene

ferrill chairman	Bangor
Foster	Portland
Popplestone	Rockland

Committee

Foster chairman	Portland
retary ex-officio	

SPECIAL COMMITTEES

Committee on Nursing Affairs

B. L. Bryant, chairman	Bangor
S S Brown	Portland
G A Tibbetts	Portland

Tuberculosis Committee

G E. Young chairman	Skowhegan
Lester Adams	Hebron
Walter Gumprecht	Bangor

Committee on Investigation of Collection Agencies

E. W Gehring	Portland

Advisory Committee on Syphilis Control

B B. Foster chairman	Portland
C. E. Blaisdell	Bangor
A. H. Morrell	Augusta

Committee on Prevention and Amelioration of Deafness

Harry Butler chairman	Bangor
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G O Cummings	Portland
W A. Ellingwood	Rockland
W H Chaffers	Lewiston

Committee on Problems of Health Insurance and State Medicine

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F T Hill	Waterville
H L. Apollonio	Camden

Committee on Graduate Education

F T Hill chairman	Waterville
Julius Gottlieb	Lewiston
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Eugene Holt	Portland
L. H. Smith	Winterport

Committee on Maternal and Child Welfare

R B Moore, chairman	Portland
A. W Fellows	Bangor
C. S Bauman	Waterville
G W Twaddle	Lewiston

Delegate to American Medical Association

William A. Ellingwood	Rockland

RESOLUTION

At the eighty seventh annual meeting of the Maine Medical Association held at Poland Springs, Maine the House of Delegates in session June 26 voted to accept the following resolution as presented by George L. Pratt, of Farmington, and approved by the Council.

RESOLVED That in the opinion of the Maine Medical Association the Wagner Health Act proposes a revolutionary change in the practice of medicine, which is not justified by reliable evidence that the cost of the proposed legislation would be tremendous and in definite that it is impossible to amend the act so as to make it workable that our senators and representatives in Washington be informed that the Maine Medical Association urges them to oppose the passage of the act.

New Licensees

The following physicians were licensed to practice medicine and surgery in Maine on March 15, 1939

THROUGH EXAMINATION

Helen Bane	Farmington
Sidney Robert Branson	Passaic, New Jersey
Ernest La Pierre Coffin	Bar Harbor
Frederick Collins Dennison	Lynn, Massachusetts
George Pierre Desjardins	Brunswick
Walter Louis Henry Hall	Orono
Lillian Gertrude Moulton	Northboro, Massachusetts
Alfred Oestrich	Rumford
Julius Sherman	Mattapan, Massachusetts
Frank Rocco Visceglia	Brooklyn, New York

THROUGH RECIPROCITY

Henry Almond	Rochester, New Hampshire
Nicholas Famularo	Queens Village, New York
Chester Winfield Malmstead	Bangor

NATIONAL SCHOLARSHIPS AT HARVARD

Selection of the three outstanding candidates for admission to the Harvard Medical School next fall as recipients of scholarships offered by the school under Harvard University's long-term scholarship policy was recently announced The winners are Louis E Ward, of Mt. Vernon, Illinois, Illinois S B '39, Samuel R. Ginsburg, of Passaic, New Jersey, Princeton A B '39, and Allan L Friedlich, Jr, of New York City, Dartmouth A B '39

This is the third year of the medical school's National Scholarship plan, which is similar to that introduced by President James B Conant in Harvard College in 1934, and subsequently adopted also by the Graduate School of Arts and Sciences and the Graduate School of Design

The medical school also announced that the three students who held the awards in the entering class last year have maintained high honor records, and under the terms of the grants have had their stipends renewed for the remaining three years of their medical studies They are Glen T Leymaster, of Aurora, Nebraska, Clarke T Case, of Pyinmana, Burma, India and Laurence G Wesson, Jr, of Baltimore The three holders of National Scholarships who are entering their third year of study at the school are Ward S Fowler, of Eldora, Iowa, Carl C Gardner, Jr, of Columbia, Tennessee, and William F Loomis, of Tuxedo Park, New York.

GENITOINFECTIOUS-DISEASE CONTROL

'The sum of $4,379,250 will be allotted to the states for venereal-disease control programs during the coming twelve months," Surgeon General Thomas Parran, United States Public Health Service, recently announced

This expenditure is made possible by the LaFollette–Bulwinkle Act of 1938, which authorized an appropriation of $5,000,000 for the fiscal year 1940 Allotments to the states constitute 86.9 per cent of the total amount available for venereal-disease control work. The remaining 13 1 per cent, amounting to $620,750, will be used for research, laboratory and field demonstrations, and administration

The federal allotment, which will be supplemented by state and local appropriations and by special grants from foundations and other private organizations, will represent a larger sum of money than has been available for venereal-disease control programs in any previou Dr Parran pointed out, however, that 'funds now able do not yet approximate the estimates conside medical and public-health authorities to be necess the most effective public-health campaign against and gonorrhea" It is expected that additional allo from public and private sources will be sought for

The federal government's share for venereal- control work in the states and localities during th twelve months' period has been allotted on the b population, the extent of the venereal-disease pr and the financial needs of the various sections country

In order to receive these grants, the Surgeon G announced that states must meet certain general mi requirements in the prevention, treatment and con venereal diseases These requirements are based o ommendations adopted by the Conference of Sta Territorial Health Officers on April 13, 1936 I funds for venereal-disease control programs m matched by state or local funds and must not funds from such sources already being used.

CORRESPONDENCE

ARTICLES ACCEPTED BY THE AMERICAN MEDICAL ASSOCIATION COUNCIL ON PHARMACY AND CHEMISTRY

To the Editor In addition to the articles enumer our letter of June 2 the following have been accepte

Abbott Laboratories

Sulfanilamide — Abbott, 4 gm ampules (crysta

The Denver Oxygen Co

Carbon Dioxide Oxygen Mixture
Carbon Dioxide Oxygen Mixture Carbon D 5 per cent, Oxygen 95 per cent
Carbon Dioxide Oxygen Mixture Carbon D 7 per cent, Oxygen 93 per cent
Carbon Dioxide-Oxygen Mixture Carbon D 10 per cent, Oxygen 90 per cent

Lederle Laboratories, Inc

Immune Globulin (Human) — Lederle
Tablets Ascorbic Acid — Lederle, 0 025 gm

Wm. S Merrell Co

Ampules Caffeine with Sodium Benzoate, 2 cc.
Sulfanilamide — Merrell
Sulfanilamide Tablets, 5 gr
Sulfanilamide Tablets, 7½ gr

Winthrop Chemical Co, Inc.

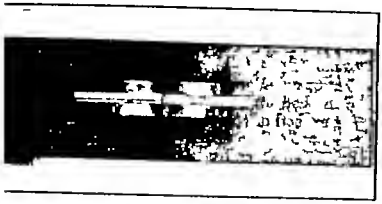
Salyrgan Theophylline Solution (Winthrop)
Ampule Solution Salyrgan-Theophylline, 1
Ampule Solution Salyrgan Theophylline, 2

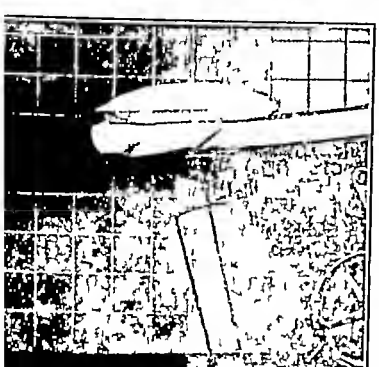
Paul Nicholas Leech, *Secret*
535 North Dearborn Street,
Chicago, Illinois

TILT RECORDER

To the Editor When the Springfield Hospital s to use glucose and pontocaine for subarachnoid anes it seemed fitting that we should have a simple and pensive instrument for measuring the tilt of the table carpenter constructed for us a spirit level, the pictu which is enclosed This instrument has the adva

ull vision rapid transportation and unlikelihood of ming mislaid, and it does not interfere with the ing of the patient or the manipulation of the table.





nd of this level can be tucked under the mattress or of any table and under any circumstances and gives a true reading

W A. R. CHAPIN M.D

hestnut Street,
field, Massachusetts

TICES

OVAL

OLD STARR, M.D announces the removal of his of 520 Beacon Street, Boston.

TY MEETINGS AND CONFERENCES

AR OF BOSTON DISTRICT FOR THE WEEK BEGINNING T AUGUST 14

AUGUST 15

. m.–12:30 p. m. Boston Dispensary tumor clinic.

UGUST 18

. m.–12:30 p. m. Boston Dispensary tumor clinic.

AUGUST 19

. m.–12 m. Staff rounds of the Peter Bent Brigham Hospital, conducted by Dr Robert T Monroe.

n to the medical profession.

30–SEPTEMBER 2 — Seminar in Physical Therapy Page 857 ly 18.

TH — Boston Psychoanalytic Institute. Page 459 issue of Septem- 38.

TH 4–6 — Institute for the Consideration of the Blood and Blood-Organs. Page 941 issue of June 1

SEPTEMBER 4–6 — Institute at University of Wisconsin Medical School. Page 160 issue of July 27

SEPTEMBER 5–8 — American Congress of Physical Therapy Hotel Pennsylvania New York City Page 857 issue of May 18

SEPTEMBER 11–15 — American Congress on Obstetrics and Gynecology Page 938, issue of December 8

SEPTEMBER 14–16 — Biological Photographic Association. Page 941 issue of June 1.

SEPTEMBER 15–28 — Pan-Pacific Surgical Association. Page 863 issue of November 24

OCTOBER 23–NOVEMBER 3 — New York Academy of Medicine. Page 977 issue of June 8.

FALL, 1939 — Temperature Symposium. Page 218 issue of February 2.

DECEMBER 2 — American Board of Obstetrics and Gynecology Page 1019 issue of June 15

JANUARY 6, JUNE 8–11 1940 — American Board of Obstetrics and Gynecology Page 160 issue of July 27

MARCH 4–9 1940 — The New England Hospital Association. Hotel Statler Boston.

MAY 14 1940 — Pharmacopoeial Convention. Page 894 issue of May 25

JUNE 7–9 1940 — American Board of Obstetrics and Gynecology Page 1019 issue of June 15

BOOK REVIEWS

L Année Thérapeutique Medications et procedés nouveaux A Ravina. 188 pp. Paris Masson et Cie, 1939 25 Fr fr

Never in the history of medicine have so many important and far-reaching therapeutic advances been made as in recent years. It is very difficult for anybody practicing medicine today to keep pace with all these advances. A good brief review of important contributions to therapy therefore, fills an important need. However any writer who attempts each year to sift out from among the enormous number of papers dealing with therapy those which present lasting useful contributions is confronted with an extremely difficult task. Furthermore, when a single writer deals with a great variety of subjects, his judgment is likely to appear somewhat distorted in certain fields with which he is not intimately acquainted. This is particularly true of many Conunental writers who frequently obtain at least their first acquaintance with much of their foreign literature from abstracts which are themselves frequently inaccurate. One objection often raised in this country to foreign works, particularly the French contributors, is that they lack that insistence on "rational therapy" which is characteristic of the teaching of materia medica in this country and which is so well reflected in the American medical literature.

This small volume contains résumés of papers covering most of the important therapeutic contributions of the past year The author has chosen to abstract only papers which present practical clinical experience. In so doing however he has included a number with recommendations that appear to us a little fantastic for example, the treatment of hypertension with a diet consisting solely of raw pears, and the treatment of leprosy with vitamin B_1

The volume is divided into three parts the first section contains isolated contributions to the therapy of Individual diseases or conditions which are arranged alphabetically In this section are included, among others references to favorable results of treatment of psychasthenias with male sex hormones, of acute alcoholic delirium with insulin, of Parkinson's syndrome with Bulgarian belladonna of painful herpes with snake venom of lichen planus with stovarsol and of Menière's syndrome with pilocarpine. There are also included favorable results with therapeutic methods which have not received or are not likely to receive enthusiastic reception in this country autohemotherapy of rheumatism shock therapy of gonorrheal conjunctivius folliculin treatment of enu

resis, lupus erythematosus with quinine bisulfate, general paresis with thyroxine, traumatic arthritis with lactic acid, and so forth

The second section includes methods or therapeutic technics and contains papers on various anesthetics, general and local, the ionization treatment of neuralgias, and oxygen therapy The dangers and limitations of mammography are noted

The final section deals with new medications The part dealing with heparin includes reports on its use locally or intravenously to prevent postoperative thromboses and also its use as an anticoagulant in transfusions, either by adding it to the shed blood or by its intravenous injection into the donor before he is bled A number of reports on the use of sulfanilamide, sulfapyridine and related compounds in certain bacterial and other infectious diseases are mentioned. Many reports on vitamin therapy are included, mostly favorable reports, but some of the most important contributions from this country are omitted

There are bound to be numerous important omissions in such a volume, and perhaps the most important gaps are from the American literature. Furthermore, although there is a small amount of editorial comment, this is limited mostly to introducing the various items but, as is almost inevitable in a work of this sort, there is no critical evaluation

The subjects dealt with are presented clearly and in a manner which the practitioner of medicine will greatly appreciate. It is very readable even to those with only a superficial knowledge of French There is an index of the subjects covered in the previous reviews from 1931 to 1937

The New International Clinics Original contributions, clinics, and evaluated reviews of current advances in the medical arts Edited by George M Piersol Vol 1, N S 2. 312 pp Philadelphia, Montreal and New York J B Lippincott Co, 1939 $3 00

As usual in these volumes, the subjects covered are various chronic brucellosis (Malta fever), the treatment of diabetes mellitus, an explanation of electrocardiography and a review of edema and dehydration The character of the articles is good, many of them being short reviews, well-written and authentic.

St Thomas's Hospital Reports Edited by O L V S De Wesselow and C Max Page, assisted by N R. Barrett, J St. C Elkington and A. J Wrigley Vol 3, Ser 2. 240 pp London St. Thomas's Hospital, 1938

The volume contains a variety of papers, all of high standard The papers do not appear to have been published elsewhere, so the volume is not just a group of collected reprints

A few papers may be mentioned A case of x ray carcinoma of thirty-one years' duration is given in detail Skin changes in the hands were noted within a year, carcinoma developed in fourteen years, metastases in twenty-nine years The microscopic changes are shown Another paper is an excellent review of the subject of gastritis Putrid lung abscess is considered in another review The volume closes with a bibliography of recent publications by St. Thomas's men and abstracts of papers not contained in the present work.

Glaister's Medical Jurisprudence and Toxicology Edi by John Glaister Sixth edition 747 pp Baltimo William Wood & Co, 1938 $8 00

This work, now in its sixth edition, by a man wh not only a graduate in medicine, but also a barrister law, has become the standard text on the subject England

The subject is presented in two sections, medical ju prudence and toxicology

The method of approach to medicolegal problems te to be more legalistic than is true of American texts, but work is comprehensive, and is made interesting by inclusion of actual cases illustrating methods of meet problems Much greater attention is paid to the questi which may arise in connection with lunacy and infantic than is usual here. Among others the chapter on ident cation of bodies is exhaustive, with detailed description the reconstitution of the bodies in the Ruxton case.

The approval of this volume throughout Great Brit is amply justified, and the book can be highly rec mended as a working text or for reference

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Bacteria The smallest of living organisms Ferdina Cohn (1872) Translated by Charles S Dol (1881) 44 pp Baltimore The Johns Hopk Press, 1939 $1 00

This book is another in the series of publications fr the *Bulletin of the History of Medicine* Its purpose, was that of the previous volumes, is to introduce read to early original investigations Morris C Leikind, careful student of the history of bacteriology, rightfu says in his introduction "We have here a brilliant su mary of the position of bacteriological studies as they w considered just before Koch opened what has been cal by some the Golden Age of Bacteriology" Here is further opportunity for teachers to add to their list books for collateral reading

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General Semantics Alfred Korzybski et al 111 New York Arrow Editions, 1938 $2 00

This paper-covered pamphlet consists of a series of a cles, and excerpts of articles, which were read at t First American Congress for General Semantics, held Ellensburg, Washington, in March, 1935 In keepi with Korzybski's statement that "general semantics not a medical science, but an auxiliary experimen natural science, and a link between medical science, ed cation, exact science and daily life," the papers deal w a wide range of topics Logic, linguistics, educatio sociology, biology and psychiatry are discussed from general semantics point of view The majority of t papers are reports of the authors' attempts to apply t theories which Korzybski has put forth in his book, *S ence and Sanity*

Sleep Your life's one third Maurice Chideckel 183 New York The Saravan House, 1939 $2 00

This is one of the worst books that has come to the viewer's attention in years Errors in spelling, m statements, loose writing and bad thinking appear every page Quick oblivion would be a kindly fate for book of this character Unfortunately, it is endorsed by foreword, written by a visiting psychiatrist of the Joh Hopkins Hospital, who thinks the author's notes are cle and scientific. The reviewer found the book, howeve not only muddy and unscientific, but so badly constructe as to be useless, at times ludicrous and thoroughly u sound

The New England
Journal of Medicine

VOLUME 221 AUGUST 17, 1939 NUMBER 7

CHRONIC ORGANIC ARTERIAL DISEASE*

EDWARD A EDWARDS, M.D †

BOSTON

WHEN the arterial supply to a limb is diminished, certain symptoms and disability follow These vary more with the rapidity and degree of the diminution of blood flow than with the nature of the disease responsible for the obstruction Since these effects are so profound, it is of consequence to focus considerable attention upon the resultant syndrome of arterial insufficiency, as well as on the specific "background disease."

I shall here attempt a summary of present-day concepts of arterial insufficiency and of the commonest background diseases I shall not discuss localized or acute disorders, such as aneurysm, embolism or trauma to arteries, nor functional disorders such as Raynaud's disease

PATHOLOGY

Aside from syphilitic arteritis, which is uncommon in the limbs most chronic organic disease of the peripheral arteries falls into two main groups arteriosclerosis and thromboangiitis obliterans.

Arteriosclerosis

We may quickly dispose of a frequent but innocuous form of arteriosclerosis, namely Mönckeberg's sclerosis In this disease the media of arteries is rendered fibrotic and calcified The calcification is even and extensive but the disease gives rise to no arterial insufficiency, since the lumen is not encroached upon (Fig 1) While the finding of the stem vessels by x ray is not indicative of arterial obstruction, neither does it rule it out, since the sclerosis may be complicated by the obstructing form next to be described

"Atherosclerosis, the important form of arteriosclerosis, a metabolic disease,"[1] is characterized by the storage of cholesterol within the intima of the artery, entailing at its very inception an obstruction of the vessel (Fig 2) While it is mainly a disease of middle age, the disease may start in early life or childhood in the presence of a high blood cholesterol, as occurs in diabetes. While atherosclerosis is widespread in the body, serious peripheral involvement is usually limited to the lower limbs The veins are practically unaffected, and the smaller arteries and arterioles are likewise spared except in the complicating arteriolar sclerosis of hypertension (Fig 4) Inflammation of the artery does not occur Calcification of the atheroma supervenes but bears no relation to the size of the atheroma X ray may, therefore, not show any arterial calcification or only a small amount in a spotty irregular pattern, even when the artery is completely obstructed by the atheroma (Fig 6)

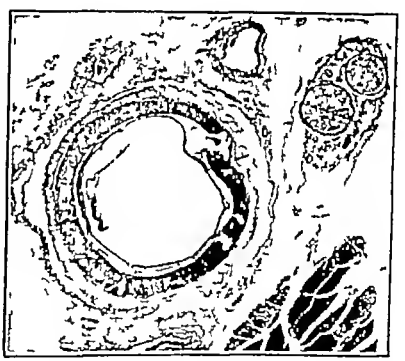


FIGURE 1 *Mönckeberg's Sclerosis in an Anterior Tibial Artery*

The media is transformed into a calcified tube which has fractured on sectioning The lumen is unobstructed The veins and nerve trunks are normal

* From the departments of surgery Boston City Hospital and Tufts College Medical School. Read at a meeting of the New England Society of Physical Medicine, Boston January 18, 1939

† This paper is based on studies aided by a grant from the Charlton Fund for Research at Tufts College Medical School.

Assistant in surgery Courses for Graduates, Harvard Medical School Assistant in surgery Boston City Hospital

The atheroma may enlarge so as entirely to obstruct the artery, but more frequently thrombosis completes the obstruction Organization of the thrombus follows, but contrary to the process in veins, the subsequent recanalization usually fails to produce any sizable lumen This must be remembered in considering prognosis for the arteriosclerotic patient

FIGURE 2 *Atherosclerosis in a Popliteal Artery*

The lumen is considerably obstructed by an atheroma Only minute collections of calcification are found within this structure and bear no relation to the degree of obstruction There is no inflammation and no involvement of the small arteries, the veins or the nerves The media is relatively normal but has taken a dark stain

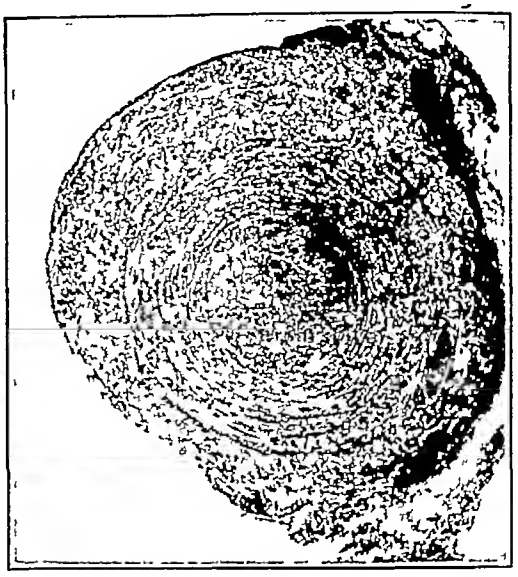


FIGURE 3 *Thromboangiitis Obliterans in a Superficial Vein of the Leg*

This process is identical with that present in the arteries There is marked inflammation, with cellular infiltration throughout the entire vessel, extending to the perivascular region Giant cells are present in the tissue filling the lumen When found, this picture is diagnostic of the disease

Buerger's Disease or Thromboangiitis Obliterans

This disease starts somewhat earlier than arteriosclerosis, occurring in the late twenties, thirties and forties Moreover, it involves men almost exclusively, being extremely rare in women Recently it has become apparent that the disease occurs in men of other races about as frequently as in those of Jewish descent The ultimate etiology is unknown, but tobacco plays an undoubted role, since the disease is practically limited to those who have smoked heavily for many years, and spontaneous remissions occur oftenest in those who cease smoking entirely

Inflammation is a prominent feature (Fig 3), and thromboangiitis obliterans differs further from

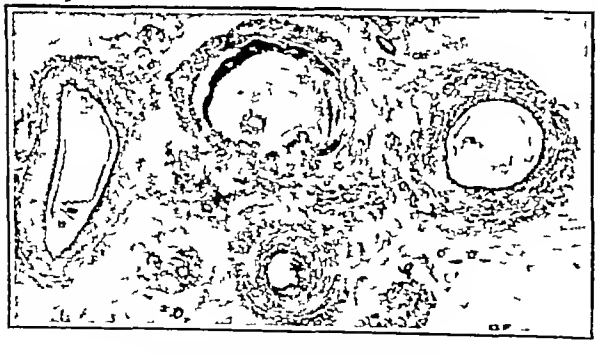


FIGURE 4 *Late Stage of Atherosclerosis in the Anterior Tibial Neurovascular Bundle*

The artery is completely occluded by an old atheroma There is an incomplete ring of calcification in the periphery of this material The smaller arteries, the veins and the nerves are all free of disease

FIGURE 5 *Late Stage of Thromboangiitis Obliterans in the Anterior Tibial Neurovascular Bundle*

The lumen of the central artery is filled by an organized thrombus Inflammatory tissue is seen in the smaller artery below, as well as in the venae comites Extension of the inflammation beyond the confines of the vessels encroaches on the small nerve trunks

arteriosclerosis in that it involves vessels of all caliber, and not only arteries, but veins as well (Fig 5) The closure of the small arteries renders them unfit as pathways of the necessary collateral circulation, and is one factor making this disease more resistant to treatment than is arteriosclerosis.[3] The upper extremities are attacked somewhat oftener than in arteriosclerosis Moreover, like arteriosclerosis, Buerger s disease may be wide

FIGURE 6. *X Ray Arteriogram of an Arteriosclerotic Femoral Artery*

This was made following an injection during life The artery is completely obstructed at the midthigh Nevertheless the calcification ("calc.) is minimal Note the fine collaterals at the end of the femoral artery and at the knee

spread involving the blood vessels of the viscera Thus Averbruck and Silbert,[3] in an autopsied group of patients with the disorder, found that 40 per cent had died from one or more vascular accidents in the viscera, predominately the heart, brain and intestines

While the involvement of arteries and veins is probably simultaneous, "migrating phlebitis" of the superficial veins may be the earliest symptom The veins attacked are frequently the dorsal venous arch of the foot, the saphenous veins or the veins of the forearm The phlebitis typically skips from one small segment to another, lasting one to four weeks at each site A man showing such a phlebitis should be watched for other evidence of Buerger s disease. Sometimes biopsy will establish early diagnosis.

The characteristic lesion is common to both the veins and arteries. It consists of a proliferation of the intima, containing multinucleated giant cells (Fig 3) These cells may not always be seen More constant is the presence of histiocytes, lymphocytes and polymorphonuclear leukocytes The media and adventitia likewise show inflammatory exudate of both acute and chronic character, and the inflammation, indeed, extends beyond the vessel wall to encroach on the perivascular structures, notably the nerves This neuritis would seem to account for much of the particularly excruciating pain of the disease.

Thrombosis soon accompanies the inflammation Organization is somewhat more active than in arteriosclerosis but recanalization is of no great importance (Fig 5)

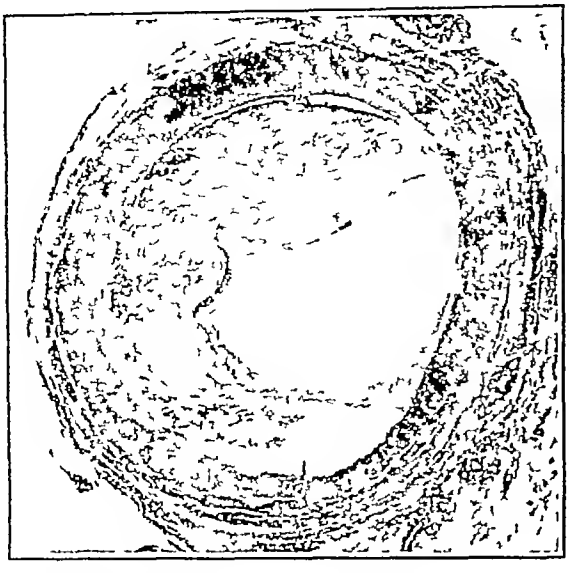
Secondary Changes

When an artery is the seat of organic disease, the irritation of its sensory nerves may initiate a reflex contraction of distant segments of that artery and indeed all the arteries and arterioles of the limb When this vasoconstriction is marked, it may additionally obstruct an already impaired circulation This occurs infrequently in arteriosclerosis but is occasionally important in Buerger s disease Since the reflex is mediated by the sympathetic nervous system the vasoconstriction can be tested by measuring the surface temperature of the limb before and after anesthesia or other inhibition of the sympathetic tone If much vasoconstriction is thus demonstrated some improvement can be expected from surgical attack on the sympathetic nerves. The occasions when such operative treatment is necessary in these organic diseases are, however infrequent, and this matter will therefore not be discussed further in this paper

In arterial insufficiency from any cause, the closure of the major arteries makes it necessary for the blood to flow through the smaller communicating vessels, which we term the collaterals (Figs 6 and 7) As these collaterals increase in size, the aggregate of their openings becomes equal to, or even exceeds, the caliber of the blocked arteries. However, this does not ensure the delivery of an equivalent amount of blood, since the flow in small vessels is not directly proportionate to their size, but rather to the square of their diameters. In these small arteries the pulse wave is damped and the blood oozes through under a lowered pressure (Fig 9) In effect then, while it is desirable and necessary to increase the size of the collaterals, in no case can these vessels transmit the quantity of blood passing through the previously normal arteries.

At present at least we have no means of restoring the major arteries involved in arteriosclerosis or Buerger s disease. It is thus obvious that the

The atheroma may enlarge so as entirely to obstruct the artery, but more frequently thrombosis completes the obstruction Organization of the thrombus follows, but contrary to the process in veins, the subsequent recanalization usually fails to produce any sizable lumen This must be remembered in considering prognosis for the arteriosclerotic patient



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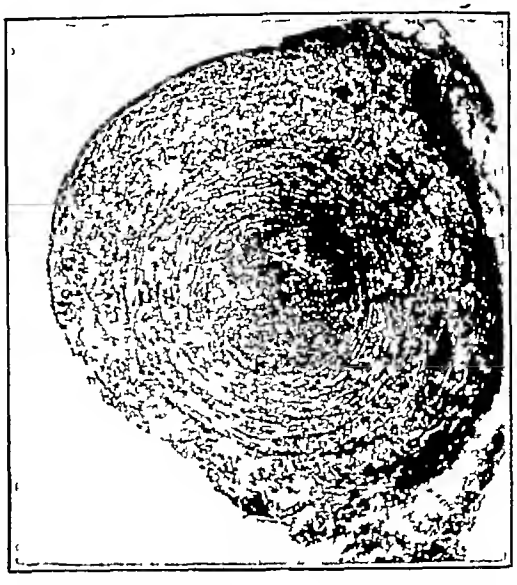

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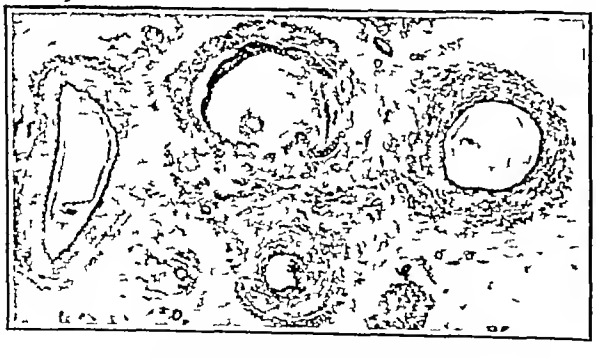

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the part should be exposed for at least fifteen minutes in a cool room (about 68°F) Because of the diminution of the warm blood stream, the fingers or toes are apt to be seriously frozen in weather that would not affect the normal person

Sensation Sensory changes are frequent in arterial insufficiency, since the nerve tissue is most sensitive to the loss of blood supply Either hypesthesia or hyperesthesia may result Complete anesthesia is rare in arterial insufficiency aod points to a primary nerve lesion

Hypesthesia is more frequent in arteriosclerosis

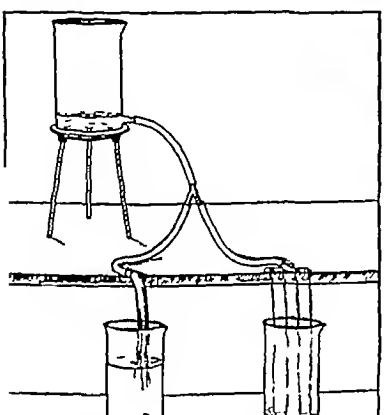

FIGURE 9

The amount of liquid flowing through one large tube for example a normal major artery contrasted with that flowing through an equivalent area in several small tubes for example the collateral arteries in Figures 6 and 7

d is less commoo in cases of Buerger s disease he distribution is glove like, correspondiog to terial fields rather than to those of the oerve unks.

Hyperesthesia and pain vary somewhat with the gree of the insufficiency Pain is apt to be more onounced fo Buerger s disease than in arterio-lerosis, and is especially severe in ulcerated areas.

Defense and repair With blood insufficient to rry on normal activity, it is not surprising that ere should be a diminished defense against in ry—traumatic, thermal or bacterial. Trauma of rivial magnitude is apt to cause necrosis Then, rough the diversion of blood to the injured rt, or because of the entrance of bacteria, there ay follow massive gangrene or, especially in arteriosclerosis, a disseminated infection We have all seen gangrene initiated in these patients by the cutting of an ingrown toenail, the stubbing of a toe or the application of some salicylic acid preparation (Fig 10) I have frequently observed a long

FIGURE 10 *Necrotic Ulcer of the Foot in Thromboangiitis Obliterans*

This was caused by the application of a proprietary salicylic acid corn cure

lasting superficial ulceration where adhesive plaster has been removed from a diseased foot Certainly this material should never be applied to such toes or feet

It should be remembered that epidermophytosis is particularly likely to be a serious infection in the presence of vascular disease In its treatment, only the mildest of antiseptics should be used Especially contraindicated are iodine and ointments containing salicylic acid

Skin color Changes in the skin color depend not only on the degree of occlusion in the major arteries but also on the patency of the non pulsatile collateral circulation With the patient lying flat the color of the foot may be quite normal When the foot is elevated to an angle varying with the severity of the insufficiency the skin shows a waxy pallor called "blanching on elevation" The change is due to the withdrawal of the venous blood from the foot and the inability of new arterial blood to reach it, since the abnormally low arterial pressure of the limb cannot supply a column of blood to the elevated part.

If the patient then stands or hangs his legs over the edge of the bed or table, the pallor is succeeded by a dark red color, the rubor of dependency" This rubor indicates the presence of a large quantity of blood in the skin vessels and is dependent on a reactive hyperemia" Lewis[8] designates this hyperemia as the discharge of the circulatory debt" He holds that during the elevation the circulation being particularly inadequate the products of metabolism are stored in the tissues These metabolites produce a dilating effect

on all the vessels of the part The vessels cannot fill, however, until the foot has been placed in a dependent position It is then that hyperemia occurs This reaction forms the basis of Buerger's exercises

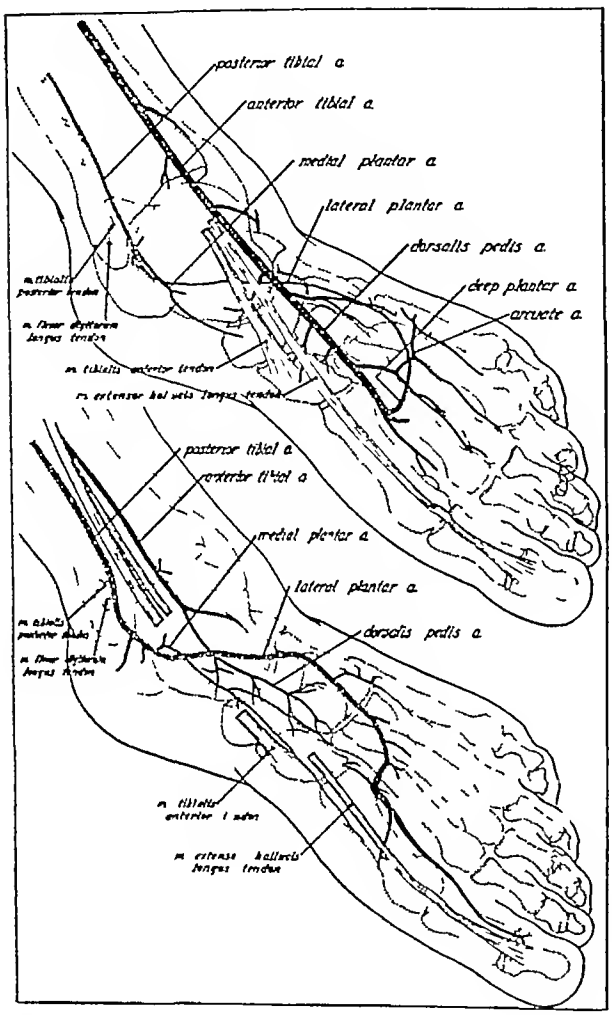

FIGURE 11 *Two Varieties of the Normal Arterial Supply to the Foot*

Above is the more typical arrangement with a large dorsalis pedis artery and a very small posterior tibial artery The latter breaks up into medial and lateral plantar arteries The dorsalis pedis ends as the deep plantar artery which perforates the first metatarsal space to join the lateral plantar artery

Below is an atypical arrangement found with sufficient frequency to be important Here the posterior tibial artery is the larger vessel Its terminal lateral plantar branch is the main distributing artery to the foot It ends on the dorsum after perforating the first metatarsal space The dorsalis pedis artery is insignificant, and would be absent clinically

Pulsation in the arteries In the upper extremities one must palpate the axillary, brachial, radial and ulnar arteries In the lower extremities one must examine the external iliac, femoral, popliteal, dorsalis pedis and posterior tibial arteries The popliteal is best palpated with the patient prone and the leg flexed by the examiner's hand The posterior tibial can be palpated just below and behind the medial malleolus

The importance of this latter vessel is not sufficiently appreciated Let it be remembered that a substantial number of people are born with a small or absent dorsalis pedis artery In such cases the posterior tibial will be large and will compensate for the absence of the former artery (Fig 11) An absent dorsalis pedis pulsation, therefore, does not necessarily indicate disease. However, since this anomaly is usually symmetrical, the absence of a single dorsalis pedis, or a single posterior tibial pulsation, is more likely to be due to disease than to anatomical variation

Because the pulsation of the main arteries is a crucial matter, it is wise not only to palpate the vessels but also to measure the pulsation by some objective means An accurate measurement can be made, both of the arterial pressure and the size of the pulse expansion, by means of the Pachon oscillometer An approximate measurement of the pulsation may likewise be obtained by the use of the simple aneroid manometer

Symptoms of insufficiency may arise with the loss of one or both pedal pulses, and with diminution in the popliteal pulse When symptoms are severe the femoral artery is likely to be closed in the lower third of the thigh, with the popliteal and pedal pulses absent Less frequent, but by no means rare, is obstruction of the upper femoral or even of the external iliac artery Variation in symptoms, especially claudication, have been shown to depend also on the degree of occlusion of the small arteries supplying the muscles [6]

The diagnosis of arterial insufficiency will be apparent from the history and examination as pertains to the functions we have just considered Once this is established, one should attempt the diagnosis of the background disease Syphilis of the arteries must always be ruled out Arteriosclerosis is by far the commonest disease It is the likely diagnosis when arterial obstruction is found in a middle-aged man or woman, particularly if the patient is diabetic Buerger's disease is the more likely if the patient is a young man who uses tobacco, and the diagnosis is strengthened if there is a history of migrating phlebitis

TREATMENT

Chronic Insufficiency

Specific treatment of the background disease Our meager knowledge of the etiology of arterial disease gives us a poor basis for the specific treat

t of these diseases I am aware of no treat
it that will remove the obstruction from the
idy blocked arteries It is not even sure that
efforts will avail in arrestiog the progress of
disease to other arterial segmeots yet unob-
cted

arteriosclerosis, we advocate the avoidance
in unduly disturbing life, the elimination of
ns, bacterial or chemical, including tobacco
moderation in the intake of cholesterol-rich
ls, especially eggs and dairy and pork prod
.' Io line with the lowering of excessive
d cholesterol, hypothyroidism and diabetes
uld be adequately controlled Thyroid should
r be used in large doses and not at all in the
of acute insufficieocy, since the resultant rise
netabollsm in the diseased part will put a fur
demand on an already inadequate circulation
diabetes the diet should not contain undue
iunts of the foods just mentioned
ecause of the apparently specific effect of to
o on thromboanguitis, smoking is absolutely
traindicated in that disease

reatment of the arterial insufficiency The
ent with chronic insufficiency must be ad
d not to overtax his circulation hy excessive
ding or walking Moreover, he should avoid
risk of trauma, and should not get his feet
l or wet Corns should be treated only by
ful superficial trimming and hy the wearing
well fitting shoes Ingrown toenails should be
ted conservatively No strong chemicals
uld be used on the feet The patient should
h his feet daily in warm soapy water dry them
tly and ruh io a little vaselioe or lanolin to
p the skin supple. Soft woolen socks cushion
feet well, and should be worn the year around
shoes must be large and of soft leather and
ypesthesia is present the patient must keep the
inished sensation in mind when being fitted
t has been pointed out that tobacco may play
art io the etiology of both important back
und diseases We must mentioo additionally
t tobacco must not be used in the presence of
rial insufficiency from any cause, because of
profound vasoconstrictive effect Lampson[8]
asuring this effect, found that smoking a single
arette reduces the blood flow to the arm from
to 80 per cent It will be readily appreciated
t such a diminution may he quite deleterious
the face of an already existing insufficiency
n my experience the application of alternating
tion and pressure has been the most effective of
methods to increase the collateral flow in the
jority of patients This treatment is based on
sound principle that a small negative pres
e applied distally will increase the velocity and
quantity of the blood flow during treatment, and,
by repetition, will produce a lasting dilatation of
the collateral vessels Elsewhere I[9] have described
the use of a geotle heatiog of the limh during the
treatment io order to relieve any iocidental vaso-
spasm

Before treatment is started, one must make sure
that there is neither a complicating venous throm
bosis nor any pyogenic infection io the limh since
the treatment may precipitate the loosening of an
embolus or the dissemination of bacteria. More
over the physician should personally attend to the
details of the treatment, varying them for the
individual patient

When a suction pressure apparatus is unavail
able, or when it is contraindicated Buerger s exer
cises constitute the mainstay of treatment. The
exercises consist essentially of a periodic elevation
of the limb followed hy dependency The mech
anism of its effect in dilatiog the collaterals has
been discussed in the section on symptomatology
The exercises should be done in a warm room,
with the patient lying on a bed and with the
lower limhs undressed. The elevation is carried
out hy resting the legs against some padded ob-
ject, like a back rest an inverted chair or a
hinged Buerger s board Elevation is continued
only until blanching is maximal This takes an
average of two minutes. The patient then sits
with the legs hanging freely over the edge of
the bed for another two mioutes During this
second position the patient may perform active
exercises of the feet in order to strengthen the
muscles and diminish stiffness If the patient is
feeble, a third period of simple horizontal rest
follows for one minute. This cycle, as enumer
ated, occupies five minutes, and should be repeated
for the total of one hour at a sitting To produce
a substantial effect, the patient must exercise at
three or four sittings a day totaling three or four
hours

The intravenous injection of hypertonic saline
is extensively used in some clinics, and undoubted
ly increases the collateral flow especially in Buer
ger s disease, but I believe it less efficient than
either suction-pressure treatment or Buerger s ex
ercises

Diathermy and radiant heat are measures men
tioned only to be discouraged Local heat is
known to increase greatly the arterial flow in a
limb when the vessels show no organic obstruc
tion But this increase, according to Freeman[10]
is brought about by an increase in the local metab-
olism and a corresponding concentration of the
vasodilatory metabolites Given a condition where
the arteries are organically blocked the necessary
increase in blood flow cannot occur and the stores

of the already undernourished tissues are further depleted This cannot fail to be of harm to the extremity[11] It should further be remembered that intense heating, such as is supplied by the diathermy apparatus, will actually coagulate the tissues unless there is an actively circulating blood stream to carry the heat away as it is produced This can be easily demonstrated by the cooking of a piece of beef by diathermy Similar changes may be expected if heat is applied to a limb whose circulation is impaired Injury by heat is suggested in patients subjected to such treatment by an immediate increase in pain or the advent of gangrene

General management Arterial disease, with its disability, pain and the fear of amputation, demands considerable attention on the physician's part to supervise the general health and morale of his patient We may point out a few details of particular importance Vitamin-rich food and vitamin concentrates should be given, since general debility or loss of appetite may result in a depletion of vitamin reserves Diminution of the circulatory functions by reason of anemia or cardiac weakness should be appropriately treated Of importance also are fresh air, sunshine and the avoidance of unpleasant emotional experiences

Acute Insufficiency or Pre-Gangrene

In the face of acute insufficiency, with necrosis present or threatening, the patient must be put to bed in a hospital

Because elevation sharply diminishes the blood supply to such a limb, it is obvious that it should be kept relatively horizontal A small pad should be placed under the Achilles tendon to avoid pressure or abrasion of the heel It is advisable to keep the bedclothes off the feet, but bearing in mind the effect of heat, the cradle should not be heated

Both the specific and general measures used in treating chronic insufficiency should be applied in the acute state Pain may be an outstanding symptom here Suction-pressure treatment will often diminish it markedly, but some sedative may have to be used Alcohol is particularly useful, since it is a fair peripheral vasodilator, as well as a sedative and analgesic Moreover, Leary[12] has indicated that, contrary to former belief, the frequent use of alcohol may tend to prevent arteriosclerosis

Ulceration and Gangrene

As a rule, any patient showing ulceration should be in bed and in a hospital Ulceration brings with it the possibility of infection It is especially in these patients, therefore, that diabetes if present must be immediately and adequately controlled[13] The diabetic arteriosclerotic patient stands in contrast to the patient with thromboangiitis obliterans, in whom a spreading infection is rare

When the ulcer presents no obvious infection and also gives no great pain, it should simply be kept covered with a sterile dressing Gauze wet with hexylresorcinol solution is excellent for this purpose If the wound is mildly infected, it may be treated by frequent changes of warm boric acid compresses Buerger's exercises should be carried out, although active exercise is contraindicated As soon as the clinical and laboratory evidence of infection is gone, suction-pressure treatment should be used, both to heal the ulceration and to give a better circulation for future use

It is well to keep in mind that ulceration of these toes or feet frequently leads down into the tendon sheaths or the bones In the first instance infection of the sheaths will result and must be treated by surgical drainage If the circulation is deemed to be too precarious to support healing of such a deep process, early amputation should be considered If the ulcer overrides a sinus leading into bone, or if an x-ray study demonstrates bony destruction, healing will be difficult Ordinarily amputation at some level is necessary, although I have seen spontaneous separation of a sequestrum and healing after intensive suction-pressure treatment

If there is reason to suspect a rapidly spreading infection, especially common in arteriosclerosis (both diabetic and non-diabetic), conservative measures must not be relied on too long Under these conditions amputation is frequently an emergency measure If the patient is very ill, a true guillotine amputation should be performed, and reamputation done some few days later

In some patients, pain is so excruciating as to prevent the proper carrying out of conservative measures If it is determined that this one factor is preventing a favorable outcome, desensitization of the affected part should be accomplished by a temporary interruption of the sensory nerves by crushing or alcohol injections[14] This procedure should not be done if the condition of the limb is deemed altogether hopeless, apart from any consideration of pain

Finally, a massive necrosis or gangrene demands amputation This should not be delayed, since infection may supervene at any time The level of amputation must be decided according to the individual problem, and we have come to realize that amputation need not always be performed at the midthigh Moreover, it should be mentioned that some believe that in Buerger's disease spontaneous separation of the gangrenous part should

be allowed I do not subscribe to the constant application of this rule.

SUMMARY

fost chronic organic occlusion of the peripheral ries is caused either by arteriosclerosis or by mboangiitis obliterans The former is a met lic disorder occurring in men and women of dle age. In diabetes the disease may occur elatively young patients. Thromboangiitis oblit is, or Buerger s disease, occurs, almost without ption, in young men in the latter part of the nd or in the third or fourth decade. The pa is are usually heavy tobacco smokers. The rder is inflammatory and involves both veins arteries Involvement of the superficial veins "migrating phlebitis may call early atten to the disease.

bstruction of the major arteries by any disease rts the arterial flow through smaller collateral nels. This results in a diminished blood-flow rterial insufficiency, with symptoms which are pendent of the "background disease produc the obstruction

he symptoms and signs of arterial insufficiency be conveniently considered under the follow headings (1) muscle action is weak, and inter ent claudication may develop, (2) the limb is rmally cold, (3) hypesthesia, hyperesthesia and taneous pain may result from an ischemic itis, (4) there is diminished resistance to in and ulceration may result from trivial trauma, the toes and feet show blanching on eleva and rubor on dependency, (6) the pulsation ie affected arteries is small or absent.

ie specific treatment of arteriosclerosis con of the avoidance of mental and physical , the cessation or diminution of tobacco smok and moderation in the intake of cholesterol foods. In Buerger s disease it is essential the patient use no tobacco whatsoever

ie treatment of the arterial insufficiency may ivided into the general care of the feet, the lance of tobacco, and the increase of the col il blood-flow In the writer s experience this is best accomplished by the use of alternat uction and pressure. Such treatment is con dicated in the presence of infection or throm Under these conditions, or when the ap- us is not available, Buerger s exercises should ed

tention should be paid to the general manage of these patients Optimum general health d be maintained, and the patient encouraged fight against pain and disability

the acute states of pre-gangrene ulceration or rene, the patient should be in bed in a hos- pital The procedures previously described are used with the addition of certain measures to diminish pain and to prevent infection

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Discussion

Dr. Laurence B Ellis, Boston Dr Edwards in his excellent summary of this subject was wise to emphasize the problem as one of arterial insufficiency In considering the diagnosis and treatment of clinical disorders one should always try to understand the nature of the disturbed physiologic process which is occurring and it is particularly desirable to emphasize this in conditions such as those here under discussion where knowledge of the etiology is so unsatisfactory

It is fair to consider the problem of organic arterial disease, from the physiological angle, as one of supply and demand in which the supply of blood to certain tissues is impaired through insufficiency of the channels carrying the blood, that is the arteries. From the therapeutic standpoint the problem can often be solved for a time by cutting down the metabolic demands of the tissues by rest, maintenance of a suitable external temperature and avoidance of local infection.

The attack from the viewpoint of increasing the supply of blood is more complicated, and necessitates a knowledge of the physiological factors which alter the caliber of the arteries. Normally the arteries are under a certain tone, of which part is intrinsic in the muscle fibers themselves and part is controlled by the vasomotor nerves. This tone is affected in a number of ways which may be roughly classified as emotional and other reflex stimuli chemical stimuli such as circulating hormones, for example epinephrine, circulating products of tissue metabolism, for example histamine and carbon dioxide, and extrinsic factors for example alcohol and tobacco and physical stimuli such as heat and cold. In health the reserve capacity of the arterial bed is such that the supply of blood to the tissues is adequate even under conditions of markedly increased local vascular tone. In states of

arterial disease, however, this reserve may be so impaired that in managing such disturbances it is important to take advantage of physiologic conditions which dilate vessels and to avoid those which produce constriction This is particularly true because there is often a tendency for arterial spasm to occur superimposed on the organic arterial disease

There is therefore good physiological basis for the advice we give such patients in the management of their lives We tell them to rest, to avoid subjecting the diseased extremities to extremes of heat and cold and to avoid local trauma and infection, all of which cut down the metabolic demands of the tissues We tell them to avoid states of emotional tension and fatigue, which may result in reflex vasoconstriction, as well as in the liberation of hormones which may heighten vascular tone. They are advised to avoid tobacco because it may be a vasoconstrictor and are allowed small amounts of alcohol because it is a vasodilator Dr Edwards has already explained the physiological basis for Buerger's exercises

There are a number of well-known clinical tests for evaluating the ability of blood vessels of an extremity to dilate and increase the blood flow to the affected region Recently, in Dr Weiss's laboratory at the Boston City Hospital, Drs Stead and Kunkel have carried out some interesting experiments with a foot plethysmograph, constructed on the principle of Hewlett and Van Zwaluwenberg With this apparatus a fairly accurate quantitative expression of local blood flow is obtainable, and it may well be that such a device will eventually have a place in measuring peripheral blood flow, not only in the experimental laboratory but also in clinical practice.

NERVE INJURIES IN SUPRACONDYLAR FRACTURES OF THE HUMERUS IN CHILDREN

GEORGE G BAILEY, JR, M D *

BOSTON

SUPRACONDYLAR fracture of the humerus is the elbow fracture most frequently encountered in children Much has been written on the circulatory complications of this injury, but there is little in the literature in regard to the complication of nerve paralysis The radial, median and ulnar nerves run in close proximity to the lower end of the humerus, and they may be injured either at the time of the fracture or later during attempts at reduction

A review of the literature on supracondylar fractures which has appeared in the last decade reveals several references to associated nerve injuries In a series of 330 supracondylar fractures treated at Bellevue Hospital, New York City, and reported by Siris,[1] there were 11 cases with nerve paralysis, an incidence of 3 per cent Seven of these paralyses were radial and 4 were ulnar All patients eventually recovered power Sorrel and Sorrel-Dejerine[2] recently reviewed 207 supracondylar fractures and found 16 cases with nerve involvement, an incidence of 7 per cent There were 7 ulnar, 4 radial, 4 median and 1 combined median and ulnar paralyses These writers recommend exploration of the nerve if beginning recovery does not occur within fifteen days In a series[3] of 83 supracondylar fractures treated at the Massachusetts General Hospital there were 2 with nerve palsies, an incidence of 2 per cent One of these was radial and the other was a combination of median and ulnar Both lesions cleared up spontaneously Platt[4] observed in seven years only 4 cases of radial palsy associated with this fracture, and asserts that they are rare In 3 of these cases complete recovery occurred Platt has also seen 1 case of median and 3 of ulnar nerve paralysis, in all of which the patients recovered Jones[5] observed that the median nerve was occasionally injured in supracondylar fractures, either as an immediate complication of the fracture or as a result of attempts at reduction He believed that direct injury to the radial nerve was rare Dunn[6] asserts that in his experience the median is the nerve most commonly injured, but that in some cases a paralysis of the ulnar or radial nerve has appeared Recovery took place in all his cases

During the three-year period from January 1, 1936, to January 1, 1939, 71 cases of supracondylar fracture of the humerus in children were treated on the Bone and Joint Service of the Boston City Hospital Six of these cases, or approximately 8 per cent, were complicated by nerve involvement. In 4 cases the radial nerve alone was affected, in 1 the median nerve alone, and in 1 all three nerves, the radial, median and ulnar It was thought worth while to inquire into the probable cause of the nerve injury in each case, and to determine the time of return of function and the final degree of nerve recovery

CASE REPORTS

CASE 1 R C, a 7-year-old boy, was admitted to the Out Patient Department on January 9, 1936, 12 hours after having fallen from a chair and injured his right elbow On admission it was found that adhesive tape had been applied to the elbow in a circular fashion so tightly that the circulation was impaired and the patient had a complete median nerve paralysis in the hand There was

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inability to oppose the thumb or flex the index and middle fingers, with loss of sensation over the median distribution in the hand. X ray examination revealed a supracondylar fracture (Fig 1) Reduction was attempted

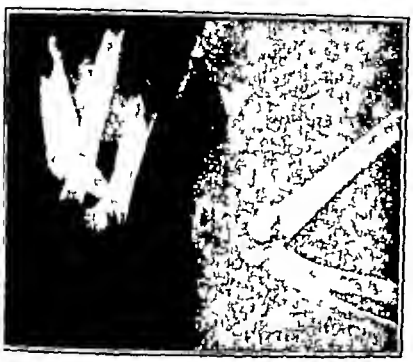

FIGURE 1 *Case 1 X Ray Photograph on Admission*

under gas anesthesia but the position obtained was unsatisfactory (Fig. 2) and the patient was sent into the hospital. Because of the marked swelling, the second reduction was delayed and the elbow was placed in a sling at right angle. One week after injury when the swelling had subsided, a satisfactory reduction was obtained under the fluoroscope (Fig 3) Four days later there was

GURE 2. *Case 1 X Ray Photograph after First Reduction*

The position of the fragments is unsatisfactory

me return of power in the fingers. The patient received physiotherapy to the hand from January 25 to bruary 25 There was gradual improvement in function. On March 17 2½ months after the onset of the ralysis, there was normal power in the hand, and no a of skin anesthesia. The patient was last seen 3 months er the fracture, when elbow motion consisted of full sion with extension to only 100 He could not be ced after this visit.

CASE 2. F S., a 10-year-old boy was admitted to the hospital April 25 1936 2 hours after a fall on his left arm. Examination showed a moderate swelling about the elbow with slight cyanosis of the hand. The radial pulse was strong There was a complete radial nerve palsy with inability to extend the wrist, abduct the thumb or extend the fingers at the metacarpophalangeal joints. X-ray films showed a supracondylar fracture of the incomplete T type. A manipulation under ether anesthesia was carried out shortly after admission, but x ray films showed that the position obtained was poor Two days later reduction was done under the fluoroscope and a satisfactory position was obtained. A cock-up plaster was added to the wrist. The plaster was removed in 3 weeks and a cock-up wrist cast was used to maintain the position. Motion was started at the elbow Five weeks after onset the paralysis was still complete. Seven weeks after onset there was a good return of function in wrist and finger extension but still some weakness Nine weeks after onset there was complete recovery of power A

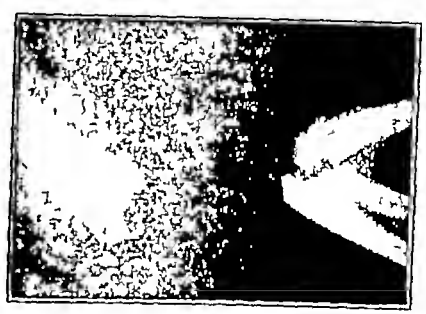

FIGURE 3. *Case 1 X Ray Photograph after Second Reduction*

The fragments are in satisfactory position

check up on May 27 1939 3 years later showed normal muscle power There was full extension of the elbow about 5° limitation of full flexion and a 10 loss of the normal carrying angle.

CASE 3 (courtesy of Dr Joseph H Shortell) A. C., a 6-year-old girl was admitted August 19 1937 She had fallen on her left arm the day before. X-ray examination in the Out Patient Department revealed a supracondylar fracture of the elbow An attempt at reduction was made, but failed and the patient was sent into the hospital Examination showed marked swelling and ecchymosis about the elbow A manipulation under ether anesthesia was carried out and the elbow was placed in a plaster slab in flexion An x ray film showed an unsatisfactory position Four days later a third reduction was done under ether anesthesia, but it also was considered unsatisfactory Following the last reduction the patient developed a complete radial nerve paralysis as evidenced by the inability to extend the wrist, abduct the thumb or extend the fingers at the metacarpophalangeal joints. Because of the development of this complication it was felt unwise to attempt further reduction and a cock-up splint was applied in the wrist. The child was discharged 3 weeks after admission. Six weeks after onset there was still no power in extension at the wrist. Seven weeks after onset the wrist could be extended but the thumb could not be

abducted Three months after onset there was complete return of function in the wrist and fingers When the patient was last seen, 9 months after injury, there was slight limitation of full extension and full flexion in the elbow

CASE 4 L. C., a 7 year-old girl, was admitted to the hospital October 13, 1937, shortly after having fallen off a playground slide and injured her left elbow There was very marked swelling around the elbow, and the radial pulse was decreased in volume. There was no nerve injury X ray examination showed a supracondylar fracture of the humerus An attempt was made to reduce the fracture under ether anesthesia, but after 20 minutes of effort it was impossible to secure a satisfactory position The arm was elevated on a posterior plaster shell with the elbow in 145° of extension, and icecaps were applied to control the swelling Twelve days later, after most of the swelling had subsided, the fracture was reduced under ether anesthesia, and the elbow was placed in flexion of 15° beyond a right angle. The following day it was noted that there was a good deal of weakness in all motions of the fingers There was no pain, and the radial pulse was strong Four days later, because of the persistence of the finger weakness, the plaster was removed, and it was found that a complete radial palsy was present. There was also some interference with the median and ulnar nerves, as evidenced by considerable weakness in spreading the fingers and opposing the thumb An x ray film showed a satisfactory position of the fragments An extension splint was applied to the wrist, and 2 weeks later physiotherapy was started for the hand and wrist. Five weeks after onset there was good motion in the fingers and the wrist could be weakly extended Six weeks after onset there was good power in the wrist, although it was not normal Three and a half months after onset the muscle power in the wrist and fingers was normal Seven months after injury the range of motion in the elbow was from 90 to 135° An x ray film showed a small calcified hematoma on the anterior aspect of the humerus The patient could not be traced after this visit.

CASE 5 P. B., an 11-year-old boy, was admitted to the hospital on October 21, 1938, shortly after injuring his left elbow by a fall from a fence. There was deformity and moderate swelling about the elbow The radial pulse was good, and there were no nerve changes X ray examination showed a supracondylar fracture of the elbow Two hours after admission the fracture was reduced under ether anesthesia, and the elbow was immobilized in acute flexion by means of a posterior plaster splint. X ray films showed good position of the fragments, and the patient was discharged to the Out Patient Department 4 days later The first check up examination in the Out-Patient Department, 2 weeks after reduction, revealed a complete radial palsy in the wrist and hand. The circulation was excellent, and x ray films confirmed the good reduction A cock up wrist splint was added to the plaster The elbow was mobilized 3 weeks after the fracture, with retention of the cock up wrist splint. Physiotherapy was then started on the wrist and hand Eight weeks after onset a slight return of function was noted. Physiotherapy was continued, and 11 weeks after the onset there was complete return of power in the wrist and fingers A check-up examination 8 months after the fracture revealed that the elbow had 5° loss of full flexion, 15° loss of full extension and about 5° of cubitus varus deformity Pronation and supination were normal

CASE 6 P. L., an 11 year-old boy, was admitted to the hospital on November 2, 1938, shortly after a fall on his left arm Examination revealed a supracondylar fracture of the left elbow, with moderate swelling (Fig 4) The circulation and nerve supply of the hand were normal. The fracture was reduced the same day under ether anesthesia, and a plaster slab was applied with the elbow in acute flexion Two days later it was observed that there was a complete radial palsy in the wrist and hand. The

FIGURE 4 *Case 6 X-Ray Photograph on Admission*

position of the fragments was determined to be unsatisfactory Another reduction was done, but the fragments could not be maintained in position Consequently traction was applied for 10 days with the elbow at a right angle. A fair anatomical result was obtained (Fig 5)

FIGURE 5 *Case 6 X-Ray Photograph after Reduction. Reduction was accomplished after ten days of continuous traction*

A cast was then applied, with a cock up wrist support. On removal of the cast 5 weeks after onset there was slight power in dorsiflexion of the wrist. Physiotherapy was instituted and continued until 11 weeks after onset, when there was full recovery of the paralyzed muscles. Seven months after fracture the elbow showed 10° limitation of extension, 10° limitation of flexion and normal supination and pronation

DISCUSSION

In 2 cases of this series the paralysis was present prior to any attempt at reduction One of these,

radial palsy, we must ascribe to nerve injury at the moment of occurrence of the fracture, since the paralysis was noted on admission two hours after the accident, there being only moderate swelling about the elbow The other, a median nerve palsy, could be laid to constriction of the elbow by adhesive tape, but it may have been caused by the fracture. In the 4 remaining cases, consisting of 3 with radial palsies and 1 with injury to all three nerves, the paralyses appeared after attempts at reduction of the fracture. Two of these showed radial palsy after one manipulation One showed radial palsy after three attempts at reduction One showed involvement of all three nerves after two manipulations We must therefore ascribe the paralyses in these 4 cases to trauma to the nerves during attempts to reduce the fracture

In every case, return of some function in the paralyzed muscle was noted before the end of eight weeks, and complete function was restored before the end of fourteen weeks Hence it is obvious that the nerves were not severed, but simply compressed or contused

CONCLUSIONS

Nerve injury with resulting paralysis may occur in supracondylar fractures of the humerus in children, either as a result of the fracture or from trauma during reduction In previously reported cases the radial and ulnar nerves have been equally affected while the median nerve has been injured only half as often as either the radial or the ulnar In this series, radial nerve lesions predominated The nerve is usually not severed, but simply contused In such cases beginning return of function may be expected within eight weeks, and a complete return of function within fourteen weeks If some recovery does not take place within twelve weeks, the nerve should be explored To avoid injury to nerves, all fracture reductions should be done as gently as possible. If paralysis is noted the weakened muscles must be supported, and physiotherapy instituted.

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THE TREATMENT OF LOBAR PNEUMONIA WITH SULFAPYRIDINE*

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IN JUNE, 1938, Whitby[1] published experiments showing that a new drug, sulfapyridine, was effective in treating pneumococcal infections in mice. Since then many authors,[2-9] mainly in England, have reported the successful use of this drug in pneumonia Evans and Gaisford[10] first used it in 100 cases of pneumonia, with only an 8 per cent mortality Several cases of pneumococcal meningitis successfully treated with the drug are on record[11-13] More recently Flippin et al[14] have reported a 4 per cent mortality in a series of 100 typed pneumonias treated with sulfapyridine. Mild toxic symptoms have been frequently noted, but only rarely have they been serious Nausea and vomiting were found by most writers to occur in about one third of the cases. Three cases of agranulocytosis,[4 15 16] one of acute hemolytic anemia[14] and several of drug eruption[17] have so far been recorded

CLASSIFICATION

The present study deals with 84 patients with lobar pneumonia treated at the Rhode Island Hospital during the winter, 1938–1939 All cases in which the diagnosis was definitely established and there were data adequate to permit evaluation of treatment were included The criteria for diagnosis consisted of symptoms and physical signs of lobar pneumonia and in every case confirmation by x-ray Pneumococci were typed in 74 cases, and were demonstrated by culture in 4 of the remaining 10 patients Cases of hemolytic streptococcus and *Friedlander's* bacillus pneumonia were not included Blood cultures were taken on all patients on admission Blood counts and determinations of free sulfapyridine in the blood of all drug-treated patients were obtained at

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frequent intervals Oxygen was administered when needed

Of the 84 patients 22 were treated with serum only Ten of these were consecutive admissions in November and December, 1938, before a supply of sulfapyridine had been obtained, the remaining 12 cases were selected for this treatment in alternation with others treated by other measures Of the 2 deaths in this group, noted below, 1 occurred in the 10 cases treated prior to January 1, and 1 in the 12 cases treated subsequently Forty-four patients were treated with drug alone, 13 with serum and drug, and 5, entering the hospital after the fifth day of their disease, received no drug or serum therapy During the first part of this study a strict rotation of cases in order of their admission was used in assigning them to any one group Specifically, patients given both drug and serum were not chosen because of any greater severity of their illness More recently all patients have been given sulfapyridine Severe cases were present in all groups in about equal proportions Analysis of the duration of the disease at the time of admission showed that those in the serum-treated group averaged 2 4 days, while those treated with drug alone averaged 3 2 days In the group of patients treated with serum and drug the average duration was 2 0 days The average age of the drug-treated patients was slightly less than that of those who were serum-treated, forty-two as compared to forty-three, while those receiving both serum and drug averaged fifty years Extremes of age varying from fifteen to seventy-seven were present in both the drug and serum-treated groups

DOSAGE

One hundred thousand units of serum was the usual initial dose, and more was given if needed Sulfapyridine* was given according to the following plan 2 gm as an initial dose, repeated after four hours, thereafter 1 gm every four hours day and night for twenty-four to forty-eight hours, and then 1 gm every six hours until the temperature had remained normal for twenty-four hours Usually between 20 and 25 gm was found to be sufficient, and in only 3 cases was a total of 30 gm exceeded.

RESULTS

Table 1 shows the mortality in the various groups, with the surprisingly low mortality of 2 per cent in the drug-treated group Not included in the table are the 5 untreated patients admitted after the fifth day of their illness Three of these died Comparable to this group there are 10 cases, also admitted after the fifth day of their disease, included in other groups Seven of these were treated with drug alone, and 3 with serum alone None died

*Supplied through the courtesy of Merck and Company Rahway New Jersey

TABLE 1 *Mortality in Treated Cases*

TREATMENT	NO OF CASES	NO OF DEATHS	POSITIVE BLOOD CULTURES	PATIENTS OVER 60	MORTALITY
					%
Drug alone	44	1	5	9	2 | 7
Drug and serum	13	3	1	4	23 |
Serum alone	22	2	3	3	9
Totals	79	6	9	16	
General average					8

The response to the drug shown in the temperature charts (Table 2) was only slightly less striking than that in the serum-treated group No correlation could be found between the rapidity of drop in temperature and the day of the disease when sulfapyridine treatment was started This is in marked contrast to the generally accepted views on serum therapy, and if borne out by other reports may indicate a particular field of usefulness for the drug in cases seen after the third day In this series 7 cases were treated with the drug after the fifth day of the disease Recovery was in each case much more rapid than that of 3 comparable cases treated with serum only

TABLE 2 *Effect of Treatment on Fever*

TREATMENT	TEMPERATURE FALL TO NORMAL WITHIN 24 HR		WITHIN 48 HR		AFTER 48 HR	
	No of Cases	Per Cent	No of Cases	Per Cent	No of Cases	Per Cent
Drug alone	24	55	14	32	4	9
Serum alone	14	63	4	18	2	9
Serum and drug	9	69	0		2	16

It has been previously noted[14] that the blood levels of the drug do not parallel with any regularity either the dosage or the clinical improvement Our findings are in agreement with this observation Taking the highest figure for free sulfapyridine in the blood obtained in each patient, the average in our series was 4.3 mg per 100 cc. Good results, however, were obtained with a concentration as low as 1 0 mg, and little effect was occasionally noted with blood levels as high as 8 0 mg

Mild toxic reactions were present in a large percentage of the 57 patients receiving the drug The most prominent were nausea and vomiting, which were present in well over half In 8 cases

the drug had to be discontinued because of these symptoms but in only 2 was this done before an adequate amount had been given Cyanosis was present less often, and cleared rapidly on withdrawal of the drug Severe headache was relatively rare The significance of the transient finding of red blood cells in the urine following administration of sulfapyridine, noted in 4 cases, seems doubtful in view of the coincidental infection

The foregoing toxic symptoms bore no apparent relation to either the blood level or to the total dose of the drug When present, however, the nausea and vomiting could sometimes be partly relieved by cutting the dose in half, by omitting one or two doses or by changing the method of administration. Usually the drug was given crushed in warm milk, but sometimes other vehicles or none at all proved more agreeable

TABLE 3 *Toxic Reactions Seen in 56 Cases Treated with Sulfapyridine*

TOXIC REACTIONS	NO. OF CASES
Nausea	36
Vomiting	32
Cyanosis	22
Drug fever	8
Headache	4
Red blood cells in urine	2
Rash	

Drug fever was noted in 8 cases This consisted of a gradual rise in temperature, usually to not more than 101°F., and unassociated with any subjective symptoms It occurred six to eight days after the first dose of the drug and usually subsided after four or five days The only case not running this benign course occurred following an excessive total dose (46 gm.), and was marked by prolonged high fever, prostration and a morbilliform rash It is interesting that the only 2 patients in the series to receive over 40 gm of the drug developed drug fever and drug rash No cases of agranulocytosis or hemolytic anemia were observed. The tendency to develop slight anemia did not seem to be greater than that in any other acute infection treated by other means.

There is some disagreement in the literature as to which types of pneumococci are most susceptible to sulfapyridine.[1 18] In our experience the drug was equally effective against all types, with the possible exception of Type 3 It may be, as has been suggested,[18] that the susceptibility varies with the strain and not the type. Of the 74 cases that were typed, 14 were Type 3 Six of these were treated with drug alone, 4 with serum alone and 4 with serum and drug One death occurred in each group In the series there were 9 patients with positive blood cultures. Five of these received drug alone, 3 serum alone and 1 a combination of both. Again 1 death occurred in each group There were 16 patients over sixty years of age in the series. Nine of these were treated with drug alone, with only 1 death Three were treated with serum alone with 1 death, and 4 were treated with drug and serum with no deaths These three groups of patients—those with Type 3 infections, those with positive blood cultures, and those over sixty—are usually considered to carry a poor prognosis. In all of them drug treatment alone, in our small series, has proved as effective as other forms of therapy

TABLE 4 *Types of Pneumococci Found*

TREATMENT	TYPE OF PNEUMOCOCCUS										
	1	2	3	4	5	6	7	8	14	19	24
Drug alone	12		6	1	5	1	2	4	1	2	1
Serum alone	11	1	4	1	4			1			
Serum and drug	5	1	4		1			1	1		
Totals	28	2	14	2	10	1	2	6	1	2	1

Among the complications noted, small sterile effusions and delayed resolution were the commonest Empyema yielding viable organisms on culture was present in only 1 case. In all, complications were present in 5 or 11 per cent of the drug-treated group and in 4 or 14 per cent of the serum treated group Four or 31 per cent of the patients given both serum and drug showed complications

DISCUSSION

Obviously the present series is too small to permit any sound conclusions as to the relative merit of sulfapyridine and specific serum in the treatment of lobar pneumonia However certain impressions which seem justified have been gained Sulfapyridine has been shown to exert a markedly favorable influence on the course of the disease in the great majority of cases The mortality figures alone are ample evidence of this In addition the clinical course of the patients, as shown for instance in the temperature response, was favorable and roughly paralleled that of the serum-treated cases An attempt was made to grade all cases as to the therapeutic response, taking into consideration the number of lobes involved the day of the disease when treated blood cultures, age of the patient, type of infecting organism temperature response and presence of complications. According to this classification 90 per cent of the drug-treated cases yielded good results, as compared to 73 per cent of the serum treated group

In 2 cases there was an opportunity to study the comparative effects of the drug and serum in the

same individual at different times The first of these patients, a thirty-eight-year-old man, was admitted on February 6, 1939, with a Type 1 right lower lobe pneumonia He made a dramatic recovery after receiving 100,000 units of horse serum on the second day of his illness After two weeks at home following discharge he was again admitted on March 3, 1939, with Type 1 involvement of the right upper and middle lobes, and had an almost identical response to drug therapy, which was started on the third day of his illness On each occasion his temperature dropped from over 104°F to normal in nine hours The second patient was a seventy-year-old man who entered the hospital on January 6, 1939, with a Type 1 pneumonia involving the right middle and lower lobes Blood culture was negative He received 140,000 units of serum, but his temperature rose steadily from 104 to 104 8°F in the following three days Sulfapyridine was then given, with a fall in temperature to 100°F in the next eighteen hours, and subsequent recovery

The only death in the drug-treated group occurred in a sixty-one-year-old man who entered the hospital on the fourth day of his disease with a Type 3 left lower lobar pneumonia His blood culture was positive, and he was delirious on admission His blood urea nitrogen was 132 mg per 100 cc, and blood creatinine 6.5 mg Despite administration of 20 gm of sulfapyridine, oxygen and intravenous fluids his temperature gradually rose from 98 to 101.5°F and he died on the fourth hospital day Autopsy revealed almost complete consolidation of both lungs and granular contracted kidneys, which were thought to represent an old arteriosclerotic nephritis A hypertrophied heart, generalized arteriosclerosis and syphilitic aortitis were also found

The relative failure of the combined drug and serum therapy in the small group so treated is surprising, in view of experiments on their combined action both in vitro and in animals [18 19] Our figures are certainly too small to permit any conclusions on this point

From our results it can be inferred that at least in the great majority of cases sulfapyridine exerts no serious toxic effects if used in the dosage described However, nausea and vomiting were quite troublesome The occurrence of both rash and drug fever in the 2 patients receiving over 40 gm of the drug suggests that these large doses should be used with caution We have observed no agranulocytosis or acute hemolytic anemia, but their known occurrence in occasional cases makes frequent blood counts and close observation essential

We found sulfapyridine of particular value in cases first seen after the fifth day of the disease and in cases in which no type could be obtained Seven cases falling in the first group and 9 in the second are present in this series, and all of them recovered If any clear indication for the use of sulfapyridine exists it is in these groups

SUMMARY AND CONCLUSIONS

The results in a series of 84 cases of lobar pneumonia are presented Of these, 44 were treated with sulfapyridine alone, with only 1 death

A smaller group of 22 patients treated with serum alone is included for comparison

Sulfapyridine has been demonstrated to be an effective drug in the treatment of pneumococcal lobar pneumonia, and to be particularly applicable to certain types of cases No serious toxic effects were noted in this series

Ultimate evaluation of the relative effectiveness of serum and sulfapyridine in the treatment of lobar pneumonia cannot be made until a large number of cases have been recorded

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GRANULOCYTOPENIA FOLLOWING SURGICAL SEPSIS AND TREATED WITH ADENINE SULFATE

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IT HAS been frequently observed that following operation many patients unexplainably become much sicker than the operation would warrant, whether owing to its extent or to the amount of infection present. These patients run a progressively downhill course without any distinct localizing symptoms and show progressive distention and general toxicity. Routine examination of the blood frequently shows the only abnormality to be a leukopenia with a normal differential but an increase in the percentage of young neutrophils. As Van Duyn[1] states: "This would indicate a wearing out of the leukopoietic power and offers an explanation of the patient's lack of response to ordinary measures." This leukocytic exhaustion always indicates a serious prognosis regardless of the initial pathologic lesion or operative manipulation.

Schilling[2] describes the successive steps in leukocytic exhaustion. First there is a leukocytosis with neutrophilia and an increase of young forms. With continued irritation the numbers of immature neutrophils become even more marked and myelocytes appear, and eventually the total count falls, with a resulting leukopenia and agranulocytosis. Schilling attributes this phenomenon to the overwhelming irritation of severe acute sepsis or to the persistent drain of a long-continued infection.

Agranulocytosis is considered by some authors[3] to be primarily a disease of the myeloblastic tissues followed by a loss of resistance resulting in overwhelming infection, the agent responsible for the cessation of myeloblastic activity being unknown. On the other hand, Reznikoff[4] believes that agranulocytosis as due to a depression of the production of granulocytes or to their delivery into the circulation because of an inherent failure on the part of the particular individual in the course of a toxemia rather than because of any toxic agent.

In view of the above, the following case of a patient with an apparently normal leukocytic reserve who developed a severe leukopenia and a rapid fall in the granulocytes, accompanied by a severe toxemia and prostration, in the course of an abdominal infection, is presented.

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CASE REPORT

B. H., a 40-year-old policeman, entered St. Vincent Hospital December 5, 1938, complaining of generalized abdominal pain with vomiting of 36 hours' duration. His past history was not significant other than that he had had a positive x-ray diagnosis of duodenal ulcer 15 years previously. He also had given fifteen blood transfusions in the past 2 years, the last one 10 days previous to the present illness. He had had no medication other than irregular use of Sippy powders and an irregular bland diet. He had been using no drugs and had been able to perform his regular duties.

Thirty-six hours before admission, while on duty, the patient complained of epigastric pain similar to the periodic attacks he had had for 15 years. The initial pain was relieved by drinking a glass of milk. One hour later the pain returned and was not influenced by a glass of milk or a Sippy powder. The following day the patient was quite comfortable until that evening, when a pain occurred in the lower abdomen, causing nausea and vomiting. When he was seen by his physician the pain was acute and diffuse over the entire abdomen and in the back, and radiated to the end of the penis. There was no frequency or dysuria. The pain was not controlled by ½ gr. of morphine, given in divided doses in 1 hour.

On admission the temperature was 101° F., the pulse 92, the white-cell count 16,900 with 86 per cent polymorphonuclears, the hemoglobin 75 per cent and the red-cell count 4,800,000. On local examination the abdomen was slightly distended below the umbilicus with generalized rigidity of the entire abdomen, more marked over the lower half. There was generalized tenderness in both inguinal regions. Deep palpation in the epigastrium caused pain. Rebound tenderness was referred to the lower abdomen and not well localized. There was marked suprapubic tenderness. Rectal examination showed no abnormal masses and no bulging, but there was slight tenderness anteriorly in the midline.

At operation on the day of admission a large amount of thin turbid fluid was obtained. The appendix was retrocecal and perforated in its mid-portion over an ulcerated fecalith. The appendix was removed and the abdomen drained.

Following operation the patient's condition was fair until 2 days later, when there was an increase in abdominal distention with vomiting of retained gastric secretions, and restlessness and increased toxemia. This was accompanied by a fall in total granulocytes (Table 1). An Abbott tube with continuous suction was inserted with only slight relief. The tube could not be inserted through the pylorus, presumably because of contraction due to the old ulcer and was replaced with a Levine tube. Peristalsis was active and flatus and fecal return with the Harris drip were adequate, yet the patient became more toxic, restless and irrational, with increasing distention. One cubic centimeter of parenteral liver concentrate was given on the 2nd and 3rd postoperative days, without effect. The general condition grew worse and

the polymorphonuclears continued to decrease. Ten cubic centimeters of Pentnucleotide was given on December 9, owing to delay in securing adenine sulfate The same evening 2 gm of adenine sulfate dissolved in 200 cc. saline was given intravenously The following day the general condition was improved and the leukocyte count increased This dose was repeated with an abrupt improvement of symptoms

Five days later, on December 14, there was return of intense abdominal pain with increasing distention and rising temperature and pulse. Rectal examination was negative. However there was an adequate leukocytic response to the increasing infection. The white-cell count was 18,000, with 84 per cent polymorphonuclears An enterostomy was performed, with prompt relief of the symptoms of obstruction The skin irritation from profuse intestinal drainage following the removal of the enterostomy tube was satisfactorily controlled with daily exposures to infra red and ultra violet rays with kaolin dressings

Following this the abdominal symptoms cleared up, to be followed by oliguria, with albumin, white and red blood cells, and hyalin and granular casts in the urine and a nonprotein nitrogen of 67 mg, a creatine of 3 3 mg and chlorides of 250 mg per 100 cc. of blood This condition was gradually controlled, and the patient was discharged symptom free on January 10, 1939 His abdomen was soft, his bowels were regular, and the enterostomy incision was almost completely healed. The blood chemical findings and counts were normal

At examination on January 28 the patient was symptom-free and had gained weight, the bowels were regular, and the blood counts and differential count were normal

TABLE 1 *Summary of Blood Counts*

DATE	LEUKOCYTES	LEUKOCYTES						COMMENTS
	LEUKOCYTES	POLYMORPHONUCLEARS	LYMPHOCYTES	LARGE LYMPHOCYTES	EOSINOPHILS	ENDOTHELIALS	MYELOCYTES	
	%	%	%	%	%	%	%	
12/5/38	16 800	86	11	2	1			Operation appendectomy
12/7/38	7,300							Liver concentrate 2 cc
12/8 38	4 200	33						Liver concentrate 2 cc.
12/9/38	4 800	25	49	13	3	6	4	Pentnucleotide 10 cc Adenine sulfate 2 gm
12/10/38	7 400	47	42	0	5	4	6	Adenine sulfate 2 gm
12/12/38	12 800	70	25	3	1		1	
12/14/38	18 000	84	14	3	3			Enterostomy
1/10/39	8 200	62	27	6	1			

It was early apparent that the active process in this case was much more malignant than one of leukocyte exhaustion as described by Van Duyn [1] because of the lack of response to liver therapy and the appearance of myelocytes in the peripheral circulation It was evident that with the progressive failure and increasing toxemia a fatal agranulocytosis was inevitable.

From the considerable experimental work on agranulocytosis,[3–8] it has been demonstrated that nucleotides are a specific stimulus to myelopoiesis If this is true, then when such stimulation is either lacking in the body or insufficient because of other destructive forces, the most effective therapy should include the attempted replacement of nucleotide in concentrated form

The following conclusions from experimental work[8] place this therapy on a rational basis (1) Nucleic acid exerts a chemotactic effect on normal myeloid foci, with a prompt effective increase in the delivery of granular leukocytes to the peripheral circulation (2) Repeated large intravenous injections tend neither to exhaust nor to cause a malignant hyperplasia of the myeloid elements in normal animals (3) A short course of injections stimulates a myeloid hyperplasia of normal marrow without otherwise injurious consequences, a fact which is reflected in an absolute and relative increase in the granulocytes in the blood stream

Adenine sulfate prepared by the hydrolysis of yeast nucleic acid was chosen as the most effective agent The material is prepared by dissolving the salt in normal saline, 1 gm to 100 cc, by boiling, and is given intravenously It is not readily soluble and it may be necessary to add 10 per cent hydrochloric acid to the suspension for complete solution The latter mixture is slightly more irritating

It is urged that a routine procedure in severe septic conditions consisting of initial complete blood counts on admission for comparison, and daily white-cell counts and differential smears, be made in order to determine early the presence of leukocytic exhaustion or granulocytopenia

CONCLUSIONS

Granulocytopenia developing as a result of severe sepsis is a severe and fatal complication

Nucleotides have chemotactic, maturative and initiatory stimuli for neutrophilic myelocytes when the basic mesenchymal tissues from which they arise are in a condition to respond

Adenine sulfate in 2-gm doses given intravenously is specific and non-toxic in stimulating myeloblastic activity under such conditions

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REPORT ON MEDICAL PROGRESS

INDUSTRIAL MEDICINE

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INDUSTRIAL medicine is progressing along the lines of preventive medicine and the protection of the worker from the hazards of his environment. These hazards are the risks of accident and of occupational disease or poisoning. Naturally such risks occur in differing proportion, depending on the products manufactured and the processes employed.

In the majority of the large manufacturing plants machines are well guarded and workers are instructed concerning hidden dangers to be avoided, and are protected by engineering devices from exposure to noxious dusts and fumes. In addition, physical examinations on entrance prevent workers from being assigned to work for which they are unfitted, while periodic examinations of those exposed to hazard prevent the development of chronic poisoning among any having an idiosyncrasy to some particular substance. This control has been gradually developed over a period of years.

Industrial medical departments exist in few factories employing less than five hundred workers, in spite of the fact that nearly 62 per cent of the industrial wage-earners are employed in such plants.[1] The fact appears to be that while nearly 40 per cent of those working in factories have from fair to good medical supervision the majority of the workers have only such supervision as is provided by the community physician who, unless the worker is one of his private patients, only sees him following an industrial accident. In order to improve this situation the National Association of Manufacturers, through its Committee on Healthful Working Conditions, has started a campaign to inform small manufacturers of the value and importance of a simple, well-run industrial medical service, and to urge the establishment of such services throughout the country.[2] It is assumed that the physicians who are now employed to care for industrial accidents will be drawn more closely into contact with the factory and will have an opportunity to study the machine and other hazards to which the workers are exposed and to advise the management of steps which should be taken to remedy dangerous conditions.

The State of Massachusetts, through its Department of Occupational Hygiene is prepared to help physicians taking over such work with advice and by examinations of the working conditions, maintaining secrecy as to the findings and the advice given. The American College of Surgeons is also glad to give what help it can in solving the problems that may be encountered, as is the American Medical Association.

The emphasis in industrial medicine is to prevent absence due to illness, whether of industrial or non-industrial origin, by every means it can, to reduce the period of incapacity from industrial accidents and to provide healthful working conditions for plant employees. Regarding the importance of non-industrial injury and illness it has been stated: "The average worker loses nearly nine days per year from non-industrial injury and illness or approximately fifteen times as much time as he does from industrial injuries."[3]

Surgery

Industrial surgery is chiefly traumatic surgery, and is carried out either in the factory dispensary in the case of minor injuries or in a general hospital in the case of major injuries. The majority of industrial injuries are minor in character and heal rapidly without loss of working time if properly treated. In a certain proportion of the cases the worker's task must be changed or modified in order that he may continue work. Continuing work is of great importance to him, as

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his earnings considerably exceed any compensation which he might receive, and his morale is maintained during treatment

Gentle but scrupulous cleansing of all wounds, either with soap and water and alcohol or with benzine, followed by iodine or a 2 per cent solution of gentian violet, is all that is necessary for most minor lacerations Sutures of lacerations when done are loosely tied to allow for subsequent swelling In cases where there is the slightest chance of a severed tendon, careful tests of function are imperative All crushing injuries, whether or not a fracture is present, should be splinted and x-rayed

The difficult finger fractures involving the middle or the proximal phalanx can, after reduction, often be held in position by flexion of the fingers over a roller bandage instead of the cumbersome banjo or other traction splint, which should not be tried until the simpler method has failed Fractures of a single toe or metatarsal will heal well and allow limited work if the foot is covered by a heavy wool sock and then immobilized in a United States Army type shoe

Varicose veins are a frequent cause of disability because of the complicating ulcers and eczema The present incision and injection method has produced normally functioning legs, and when it can be used is better than multiple injections

There has been much discussion among industrial surgeons as to the value of the injection treatment of hernia The general feeling appears to be well summed up by McMillan,[4] who after five years' experience believes "This should not be looked on as a panacea, but in selected cases as an aid in attacking the problem of hernia and in other cases as a method which will afford help which cannot be obtained by any other procedure" Surgery still appears the best and most frequently employed method of treating hernias that develop among industrial workers

Orthopedics

Of orthopedic conditions the "strained back" is of frequent occurrence It varies from a minor pulling of the muscles and ligaments to a severe sprain Any underlying disease prolongs the disability greatly, and there is a distinct psychological factor which must be combated

Every workman who strains his back severely receives two injuries, one to his back, the other to his morale Both conditions must be successfully treated in order to return the worker to his job

Irwig[5] reports that the deep injection of eucupine in oil produces a prolonged anesthesia in the painful back The deep injection of novocain has been successful enough to suggest that this drug is worth trial The conservative principles of rest and support are still followed in treatment of these cases

Returning the patient to work requires the co-operation of his foreman He should be given trivial work at first, such as running an elevator, and later work entailing only light lifting The patient should be instructed to lift by bending his knees, keeping his back straight and using his thigh muscles in making the lift He should be kept under medical supervision until able to resume his regular work

Medicine

Among those practicing industrial medicine the emphasis has swung from the treatment of industrial accidents to the prevention, diagnosis and treatment of occupational disease The importance of taking an occupational history in the case of every patient who works in industry is something the general practitioner in an industrial community should have in mind "Such a history is especially important before an operation is decided upon since unsuspected industrial disease may make such an operation unsafe at the time"[6]

Several diseases deserve particular mention

Pneumoconiosis

Of the industrial diseases which are of fairly common occurrence the pneumoconioses are the most important The present belief may be summed up as follows only free silica (quartz) and asbestos can of themselves alone produce disease entities causing incapacity[7] Other industrial dusts may result in the development of allergic symptoms among those exposed, as in the case of the castor bean, or may render the worker somewhat more susceptible to respiratory infections, as in the case of inert inorganic dusts, such as iron dust cement dust and artificial abrasive dust This belief is the result of much animal research and of clinical experience in Europe and America

The three important factors which are considered in the case of a worker exposed to dust are the character of the dust, its quantity in the air breathed and the length of exposure

The impinger described by the United States Public Health Service is at present the instrument most widely used to determine the dust count Hatch[8] has suggested the following stand

ards of permissible dust depending on the type encountered

KIND OF DUST	MAXIMUM PERMISSIBLE CONCENTRATION *million particles per cu ft*
Containing no silica	50
Containing any small amount of silica free or in combination	30
Containing 20 to 40 per cent free silica	10
Containing greater than 40 per cent free silica	5 (preferably less)

To this list should be added a permissible dust count of not over 5,000,000 particles per cubic foot of air for asbestos dust as recommended by the United States Public Health Service.[9]

The most important diagnostic evidence is secured by x-ray In questionable cases it is agreed that stereoscopic and lateral views are necessary, and that interpretation of the x ray films should be made by one having had considerable experience with this type of chest picture. The roentgenogram of a silicotic chest must show nodulation in both lungs, the nodules measuring from 4 to 6 mm., to be truly diagnostic of silicosis In the late stage, where infection plays a part, conglomerate masses may involve the upper lobes of one or both lungs. These masses indicate tuberculosilicosis, and closely resemble the picture of chronic fibroid phthisis The nodules tend to disappear, being obscured by the compensatory emphysema, which often involves the lower third of both lungs. Without nodulation or masses the diagnosis of silicosis should not be made. At Saranac, the term "stage of imagination" is used to describe certain x ray photographs sent in with the tentative diagnosis of silicosis.[10]

Until 1938 the only possible means of protecting the worker were exhausts which removed the dust at its point of origin and specially designed respirators Recent work at the Banting Institute[11] has suggested that the addition of 1 per cent metallic aluminum dust to the air exerts a neutralizing effect on silica dust through coating the particle with a film of aluminum hydroxide, thus converting it from a dangerous to an inert type of dust Even if this is found to be the case, properly constructed dust exhausts will remain a better procedure.

The great danger in silicosis being the development of tuberculosis, it is considered a good practice to x ray the chests of all workers who are to engage in dusty work so as to ensure that they have no focus of tuberculosis which might be activated by free silica in the dust inhaled

Asbestosis has been studied intensively The diffuse interstitial fibrosis which causes such early dyspnea is now thought to be due more to the mechanical action of the asbestos fiber than to its chemical characteristics[7] The so-called "curious bodies," otherwise known as asbestosis bodies, are found with enough frequency in the sputum of those not working in asbestos dust to make their presence alone of suggestive rather than of final diagnostic importance.[3] [12]

Both silicosis and asbestosis are characterized by dyspnea, occurring in the former usually in the late stage of the disease. The dyspnea of silicosis differs from that of cardiac disease in that the patient does not have orthopnea when lying down A quick test of the extensiveness of the silicotic process consists in determining whether the patient can hold his breath for thirty seconds, the function of the lungs is not severely affected if this test can be successfully carried out. Cough is by no means invariable, and when present may disappear when the patient ceases to be exposed to dust.[14]

There are estimated to be about 600,000 workers exposed to free silica in the United States.[13] According to Bridges[16] English records the duration of exposure before disability begins or a diagnosis is made varies from twenty-three to sixty years, with an average of thirty five years, for silicosis, and from one to twenty-seven years, with an average of thirteen years, for asbestosis

Cancer

The following rule suggested by Bridge and Henry[17] may well be used in deciding whether or not cancer is industrial in origin

> The rate of incidence in the occupation under review should exceed that in the general population to a significant extent.
>
> In the occupation concerned there should be sufficient association of the worker with a substance proved experimentally to have carcinogenic properties.

Under this rule cancers of the lung occurring among workers exposed to silica and to asbestos dust are not industrial Although they have been found at autopsy the frequency does not appear as yet to be significant[18]

The most interesting of the cancers in industry is that of the bladder, occurring among aniline dye workers. The trigone is the commonest site, but the tumors may appear anywhere on the bladder wall The changes consist of congestion, telangiectasis and small areas of hemorrhage, followed by papillomas, which finally ulcerate. The interval of exposure varies from three to fifteen years The dyes most frequently associated with the conditions are benzidine, betanaphthalamine and aniline. The method of their action is in doubt, and lies between their effect on the urine and their absorption by the blood

The treatment at present is early removal or fulguration, followed by gold radon-seed implantation This has not proved very satisfactory Very high voltage x-ray treatment may prove more successful At present it is in the experimental stage

The connection between trauma and cancer has been discussed for years Ewing[19] has set down the essential criteria as follows

1 The authenticity and adequacy of the trauma [It must be sufficient to produce alteration in the structure of tissue.]

2 The previous integrity of the wounded part. [The patient's word should not be wholly relied on]

3 The tumor must arise at the point of injury

4 A reasonable time limit must be observed between injury and the appearance of the tumor

5 The positive diagnosis of the presence and nature of the tumor is essential

According to Hoffman,[20] who quotes Ewing as above 'When the evidence shows that a wound of an apparently normal tissue never healed, that pain, swelling and discharge persisted for weeks and until the definite appearance of a malignant process, one must accept a presumption in favor of the traumatic origin"

Heat Cramps

The troublesome heat cramps often coupled with prostration which were formerly such a frequent cause of incapacity have been practically eliminated by providing 10-gr tablets of sodium chloride near factory drinking fountains The workers take from four to six of these tablets a day, thus replacing the salt lost by sweating It is this salt loss which causes the symptoms, not the heat and the drinking of cold water [21]

There is, however, a crucial danger zone of heat Injuries to the health of workers begin to occur when work is carried out at a temperature of 90.5°F or over, with a humidity of 90 per cent At this danger zone the heart is accelerated, the body temperature rises and the body loses weight at a rate of 2 pounds per hour [22]

Toxicology

In industry there are a large number of chemical substances in use whose fumes are toxic. The Division of Occupational Hygiene of the Department of Labor and Industries of Massachusetts[23] has drawn up a table of permissible concentrations in the workroom air according to the standards of the United States Public Health Service. several state commissions and other authorities Fifty-eight dangerous substances appear on this list

Most toxic substances used in industry are absorbed by the workers through the respiratory tract in the form of gases, fumes or dusts The toxic effects, acute or chronic, are frequently bizarre and may suggest some non-industrial disease Thus lead poisoning may simulate neuritis or rheumatism, poisoning by the chlorinated naphthalenes appears to be acute yellow atrophy of the liver or toxic jaundice, benzene poisoning resembles anemia or leukemia The most important recent research has been applied to the chlorinated naphthalenes

Chlorinated Naphthalenes

Three years ago there occurred in Massachusetts the death of 3 markedly jaundiced patients These men were all workers in a factory where wire was dipped in a tank containing a solution of chlorinated naphthalenes A careful investigation by the Division of Occupational Hygiene[24] suggested a toxic fume inhalation as the cause

Research at the Harvard School of Public Health[25] showed that a destructive effect on the liver of experimental animals was caused by the inhalation of these fumes The pathologic picture was one of necrosis and fatty degeneration of the liver cells The toxic effects were similar to those found in the patients cited above

Greenburg et al[26] in New York reported 3 cases similar in type Recently Drinker[27] has worked out a table of permissible concentrations of the vapors of fourteen chlorinated hydrocarbons for the air of workrooms In the great majority the concentration is set as 0 5 mg per cubic millimeter In the same paper he shows that neither a high-calcium diet nor injections of xanthine, which have been considered as possible protectors, have any effect in preventing liver injury Following the installation of suitable tanks with special exhausts, no further cases have developed

A dermatitis resembling a heavy acne is frequently present among workers exposed to chlorinated naphthalenes [28] It indicates that further exposure may lead to liver damage, and that the patient should seek other work and never return to a similar exposure

Carbon-Monoxide Anoxemia

One of the common poisonous gases occurring in industry, to which the general population is often exposed, is carbon monoxide The acute form of poisoning is well known, but the effects of chronic carbon-monoxide anoxemia are less well known and may suggest other diseases

The two most frequent sources of this type of poisoning are defective gas heaters and automobile exhaust gases, the former being the more dangerous The inhaled carbon monoxide, having an affinity for hemoglobin many times as great as that of oxygen, replaces the needed oxygen in the

red blood cell, smothering it. All the tissues of the body necessarily suffer from an oxygen deficit.

Individuals constantly exposed to carbon monoxide in small quantities gradually build up a resistance to the gas. This is apparently due to "the relation between the concentration of carbon monoxide breathed and the degree of saturation of the blood observed after repeated exposures."[28] Rapid concentration of carbon monoxide in the blood leads to symptoms of anoxemia, the symptoms usually beginning when the blood is 20 per cent saturated. Men breathing small amounts of carbon monoxide over a long period of time may not build up enough resistance and may develop symptoms of chronic poisoning. Here again the effect of personal idiosyncrasy, which makes the diagnosis in industrial toxicology so difficult, plays an important part.

The commonest symptoms found by Mayers,[29] Beck[30] and others are headache and dizziness, gastrointestinal disturbances, drowsiness, faintness, weakness in the lower extremities, insomnia, cardiac disturbances and general neurological and mental symptoms. The symptoms, as one can see, are numerous, and usually several are grouped in each patient. Headache, nausea and weakness are the more frequent complaints. The anoxia of the red cells provokes pathologic changes in many organs.

> The possible pathologic changes due to chronic carbon-monoxide poisoning ... in the nervous system may vary from damage to the lenticular nucleus and diffuse changes, such as are associated with a Parkinsonian syndrome or multiple sclerosis, to injuries to single nerves or sense organs. ... A prolonged period characterized by cardiac symptoms may result in a certain degree of permanent enlargement of the heart and in myocarditis.[31]

It is therefore good practice in cases with complaints of a general nature in which there is pallor and the general picture is one of ill health to question the patient closely as to possible exposure to carbon-monoxide gas, either at his work or in his home.

1 New Bond Street.

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CASE RECORDS OF THE MASSACHUSETTS GENERAL HOSPITAL

ANTEMORTEM AND POSTMORTEM RECORDS AS USED IN WEEKLY CLINICOPATHOLOGICAL EXERCISES

FOUNDED BY RICHARD C CABOT, M D

TRACY B MALLORY, M.D., *Editor*

CASE 25331

PRESENTATION OF CASE

A fifty-five-year-old white married man was admitted complaining of blindness

Fifteen years prior to admission he had a "cyst" removed from his right lower leg A mass which was painful to pressure grew back in its place It was not attached to the skin or to the underlying bone The appearance of this mass was followed by others all over the body, some of which by the time of entry had attained rather large size Eighteen months before admission the patient first noticed stiffness of his neck and soreness associated with movement This had gradually increased up to the time of admission Three months later members of his family saw him fall out of a chair They discovered that this fall was due to muscular weakness At the same time they noted a left facial paralysis and believed that he had suffered a stroke However, the condition did not clear up Six weeks before entry the patient noticed the onset of double vision and blurring of vision He said that his left eye was affected first but was not certain of this He then became progressively blinder until at entry he could see nothing There was no headache, nausea, vomiting, difficulty in swallowing or difficulty in speaking Two years before admission he had had tinnitus in his right ear for about one month There was no tinnitus or vertigo on entry He had not had disturbance of sphincter control His past history and family history were noncontributory

Physical examination showed an emaciated man who appeared to be older than his stated age There were multiple nodules over the body varying in size from 1 to 10 cm in diameter They were characteristically firm to hard, not attached to the overlying skin or fixed to the deeper tissues Where present near large muscles they seemed to be an integral part of the muscles, yet formed discrete masses which could be differentiated from the remainder of the area They were present on the scalp, right abdomen, right thigh, right lower leg, right groin and left supraclavicular area Examination of the heart revealed occasional extrasystoles The blood pressure was 192 systolic, 135 diastolic The lungs were normal A small firm mass was present in the right lobe of the prost Neurological examination showed a well-orien man whose memory was rather hazy Both fu showed choked disks There was a complete l of vision in both eyes Both pupils reacted light and accommodation External ocular mo ments were normal The corneal reflexes w present There was a complete left facial we ness The Weber test was positive to the left, Rinne negative on the left, positive on the rig The right palate was down, and the palate mov to the right Swallowing and speaking were n mal Movements of the neck and shoulders w weak The tongue protruded to the right w fibrillation and some atrophy The finger-to-n test was fairly good, heel-to-shin poor There w no adiadokokinesia The left leg showed atrop and emaciation of all muscles, with fibrillatic Strength was poor in all muscles especially in t legs Neck movements caused pain in the ba of the neck The upper extremities showed wea ness with no definite lateral localization T knee jerks were increased, more on the rig than left Both ankle jerks were present, wi sustained clonus which spread to the entire l The Babinski, Oppenheim, Gordon and Chaddo signs were bilaterally positive, more marked on t left There was hypesthesia to pain and temper ture over the entire right leg to the hip Vibr tion sense was poor on the right leg Positic sense was lost in both feet

The temperature was 98°F, the pulse 78, ar the respirations 15

Examination of the urine was negative. Th blood showed a red-cell count of 4,530,000 with per cent hemoglobin, and a white-cell count of 71(with 65 per cent polymorphonuclears A bloo Hinton test was negative A lumbar puncture wa done, but the dynamics were not entirely satis factory because of pain and poor co-operation Th initial pressure was 350 mm of water, with th combined jugular pressure 450 mm and the fina pressure after removal of 10 cc of fluid 180 mm The fluid was slightly yellow There were 1 lymphocytes per cubic millimeter The total pro tein was 105 mg per 100 cc, the sugar 78 mg and the gold-sol test 0001210000 A spinal fluid Wassermann test was negative A stool examina tion was guaiac negative An electroencephalo gram showed abnormal waves and was thought to be suggestive of more than one lesion or a dif fuse process

X-ray films of the chest showed a round area of increased density measuring 2 cm in diameter close to the right lateral chest wall and another measuring 4 cm in diameter close to the right border of the heart in the right lower lung field

There was another 3-cm area in the left apical area. There was marked arteriosclerosis in the aorta. The heart was not remarkable. Examination of the skull was hampered by opisthotonos. There was marked vascularization of the skull without other evidence of abnormality. The cervical spine showed a slight degenerative change between the sixth and seventh vertebrae without other evidence of abnormality. Films of the right leg showed an area of calcification in the soft tissues of the right calf lateral to and slightly in front of the fibula. The calcification had a lace-like structure, and there was definite evidence of shell-like calcification in the process. There was a soft-tissue mass bulging into the subcutaneous fat. The mass overlay the bone. There was no definite evidence of bone involvement. Stereoscopic films of the leg showed the calcification to lie essentially at the periphery of the soft-tissue mass. Repeat x-ray films of the chest three days later showed the three round areas of consolidation in the right lower portion of the lung and in the left apex to be unchanged. The one in the lateral portion of the right lung was situated close to the chest wall. The second had a semicircular shape, was close to the heart but distant from the chest wall. The third in the left apex was near the anterior chest wall, probably not in contact with it.

A biopsy of the mass in the right groin showed a soft, gray and yellow, fatty, apparently somewhat cystic mass. On microscopic examination, members of the pathology department were not in agreement as to whether the tumor was malignant but believed that it was of neurogenic origin.

On the fourteenth hospital day an operation was performed.

Differential Diagnosis

Dr. Edward D. Churchill: I am going to assume the present illness began eighteen months prior to admission. Statements before that time are vague in relation to when these masses appeared and also in relation to their size, which is merely recorded as "rather large."

The symptoms that are commonly looked for in increased intracranial pressure were absent. The record states "The right palate was down." I am puzzled by that statement because I thought that when the palate was down it meant paralysis, yet the next note indicates that the palate moved to the right.

I take it we have a patient with spastic paralysis and a lesion above the cortical spinal tract. I am entirely confused by the array of neurological signs and symptoms, and I shall have to turn to someone else for help about them.

In commenting on the encephalogram they say "The record suggested more than one lesion or diffuse involvement. That is more or less the conclusion that I came to on reading the physical examination."

I should like to ask either Dr. Ayer or Dr. Kuhlk, whichever one has not seen the patient, if, first of all, on the basis of this evidence we could safely interpret the loss of vision associated with the choked disks as generalized intracranial pressure, and, further, whether there are any localizing signs that would enable us to state that this is a single lesion within the cranium or if we have evidence that there are multiple lesions.

Dr. James B. Ayer: A single intracranial lesion of expanding type could cause all the symptoms and signs here shown, especially if placed in the posterior cranial fossa. A single tumor here placed often gives bilateral spasticity in the extremities from direct pressure on the brain stem, together with choked disks from occlusion of the aqueduct of Sylvius. However, only long standing choked disk causes complete blindness, and we may well suspect that some direct pressure on the optic pathways was also present, indicating multiple tumors. There may also be a tumor of the cord, which after all is the commonest explanation of bilateral paralysis of the extremities.

Dr. Churchill: Then we come to the question of speculating as to what type of tumor or tumors might produce the picture. As we started with the description of the lesion of course we thought of multiple neurofibromas. However, neurofibromas in their multiple form — or von Recklinghausen's syndrome — arise from the sheaths of the terminal cutaneous nerves. If I remember my teaching correctly they are never intracranial. They might grow by extension through a vertebral foramen and cause pressure on the cord, the dumbbell type of tumor, but I do not expect them to occur within the cranium and be responsible for increased intracranial pressure. Again, a peripheral neurofibroma is in the skin, not beneath the skin. It may stick out a bit but recedes into the skin as it is pressed. In their multiple form they are also apt to be associated with pigmentation and cutaneous tabs. Of course multiple neurofibromas may occur along the nerve trunks. When they are multiple they are usually associated with smaller tumors in the skin.

What other type of tumor may present this picture? I am rather at a loss to know unless I enter the very dangerous ground, dangerous pathologically and clinically, of a miscellaneous group of tumors known as endotheliomas or peritheliomas. Just what is their present status in tumor pathol

ogy, I do not know I am not aware as to whether they have all been discarded, or whether they are still recognized There are several interesting aspects of the tumors of this patient that would make them fit into the descriptions of endotheliomas or peritheliomas they are multiple, they are slowly progressive, they occur in the dura or in the pia, they may calcify, they may be confused with neurofibromas on microscopic examination In the chest we notice that the tumors are all located in proximity to the pleura In the extremities, if we make the diagnosis of endothelioma, they can arise from the perivascular nerves

Other types of neoplasm may be excluded There is a little clue in the prostate There was a hard mass in the right lobe, but that is a common finding and always invokes a long argument, there is no further evidence about it It apparently did not arouse suspicion, so that we have no expert advice on how it felt or whether it could be a primary focus

In conclusion, I shall let the matter rest and make a guess that we are going to find multiple tumors involving the meninges, the dura, the pleura and the peripheral nerves, and that the pathologist may still be working to classify this tumor to keep from throwing it into this rather hodge-podge discard of the so-called endotheliomas or peritheliomas

Dr Ayer I should disagree with Dr Churchill's conclusions that neurofibromas do not occur intracranially They may be present wherever fibroblastic tissue occurs, as in the eighth cranial nerve, and neurofibroma of the acoustic nerve is relatively common With acoustic symptoms so prominent I should favor the presence of an acoustic neuroma, with perhaps other intracranial neuromas, associated with the general picture of peripheral neurofibromatosis The pathological types vary in different locations, and even vary in the same individual in point of time so that all the tumors found peripheral or central fail to present the same degree of malignancy This aspect I prefer to leave to the pathologist

Clinical Diagnosis

Multiple neurofibromas

Dr Churchill's Diagnosis

Multiple endotheliomas or peritheliomas

Anatomical Diagnoses

Multiple neurofibromas (von Recklinghausen's disease), subcutaneous, retroperitoneal, thoracic, cerebral and spinal
Bronchopneumonia, bilateral
Arteriosclerosis, slight, aortic and coronary
Operative wounds biopsy of tumor of leg
craniotomy, ventriculotomy

Pathological Discussion

Dr Tracy B Mallory I became interested in the clinical picture in this case because I was asked for some advice following the first biopsy and before the cerebral operation As is stated in the record, there was some difference of opinion among the various members of the laboratory staff who examined the biopsy specimen as to whether this lesion in the leg was benign or a fibrosarcoma and hence capable of metastasis We frequently meet borderline degrees of malignancy where a positive decision cannot be rendered on purely histological grounds I felt rather strongly that one had to assume in this patient that we were dealing with multiple tumors rather than metastases from a single tumor, and that the patient ought to be given the benefit of cerebral exploration since intracranial neurofibromas are among the few benign cerebral neoplasms and the results of operation are usually excellent Dr Kubik will tell us about that when he describes the finding in the brain If the operation had been done a year earlier instead of in a nearly moribund patient it would almost certainly have been at least temporarily successful

The rest of the autopsy showed multiple tumors in various soft tissues scattered through the extremities, there were a great many tumors within the pelvis and along the posterior wall of the abdominal cavity, almost all intimately associated with the nerves running down in that region It was rather difficult in most instances to say whether the tumors were attached to nerves In two or three instances, however, such attachment could be proved The various chest masses were all outside the lungs One was on the lateral surface of the pericardium in apposition with the phrenic nerve One overlay an intercostal space in contact with the intercostal nerve The third had extended down from the neck where it lay in close contact with the sympathetic chain There were no tumors within the lung itself

Dr Charles S Kubik At operation it proved possible to resect only a portion of the tumor The patient developed pneumonia postoperatively and died in three days The tumor was rather large, about 4 cm in diameter, and situated in the left pontocerebellar angle It was not quite clear from just what nerve root the tumor came It was thought at autopsy that it did not originate from the acoustic nerve but from one of the nerves that entered the jugular foramen It was somewhat different from the usual tumor of the nerve

ieath found in this location in that it was a little iore diffuse, displaced the brain stem more and 'as quite definitely adherent to the leptomeninges. did not infiltrate the substance of the brain em It contained a number of cysts Histolog ally it has the appearance of an acoustic or other enign nerve sheath tumor, and the microscopical ndings would have led me to call it perineurial broblastoma

There are differences of opinion as to the origin f tumors of this type. Some believe that they rise from the cells of the sheath of Schwann, thers that they come from the mesodermal peri ieurial sheath Some would have it that in von Recklinghausen s disease it is the sheath of Schwann while in cases of solitary tumors it is the peri ieurial sheath These differences of opinion have troduced a variety of names, neurofibroma, peri ieurial fibroblastoma, Schwannoma and neuri ioma being the commonest

Dr. Mallory Dr Churchill has given us the lassical description of von Recklinghausen s dis ase, but the present-day tendency, I think, is to broaden the syndrome a good deal and to include n it all cases of multiple tumors of nerves An effort has been made, as Dr Kubik has explained, o classify these tumors into two types We have found this impractical because of the frequency of transitional forms Moreover in a single case of von Recklinghausen s disease we have seen class ical examples of both types. Therefore we be lieve that the distinction is not important

Dr. Ayer Was there only one cerebral tumor? And was the cord examined?

Dr. Mallory The cerebral lesion was single, but there was a tumor of one of the upper cervical nerve roots which had partially destroyed the axis. This might well have eventually become a fatal lesion if he had survived the cranial exploration

CASE 25332

Presentation of Case

A five year-old American girl was admitted with the complaint of constipation of one week s dura tion

The child was delivered with the aid of forceps at full term The birth weight was 8 pounds. Because of difficulty in nursing a formula was substituted which included orange juice and cod liver oil. There were no childhood diseases, and she had not been vaccinated or immunized against diphtheria She failed to walk or talk until the age of three It was stated by the mother that the child had always had a large abdomen and had continually been constipated, so that frequent, sometimes daily, enemas were necessary to produce evacuations which at best were always poor The child was unable to control the passage of urine.

Two weeks before admission the patient com plained of abdominal pain and discomfort, and her abdomen seemed gradually to enlarge. Three days passed without a bowel movement, and enemas were not productive One week before entry re turns from enemas were "like hard stony pebbles, brown in color, without blood, pus or mucus" She began to vomit food, and seemed to pass flatus per anum. For three or four days before entry the child appeared feverish although the temperature was never actually taken Mineral oil was administered for two days, with but scant evacuations

The physical examination revealed a fairly well nourished girl with typical Mongoloid facies and a markedly protuberant abdomen There was a slight cyanotic tinge over the extremities The fontanelles were closed The palpebral fissures of both eyes were narrowed The teeth were mark edly carious, and the tonsils and pharynx slightly injected In the neck there were a few small non tender cervical nodes Examination of the heart and lungs was negative. The abdomen was sym metrical but markedly protuberant and tympanitic. There was an eventration of the umbilicus No organs or masses were palpable, and there was no spasm or tenderness A small hard mass lo cated at the junction of the metacarpopbalangeal joint of the left hand was thought by the ex aminer to be evidence of an extra phalanx previ ously removed The rectum was dilated empty in its lower portions but filled higher up with soft, brown feces.

The temperature was 100°F., the pulse 80, and the respirations 24

Examination of the urine was negative. The blood examination showed a red-cell count of 3,200 000 with 65 per cent hemoglobin (Sahli), and a white-cell count of 19 600 with 80 per cent polymorphonuclears The blood smear was nega tive. The vomitus was black and coffee grounds in appearance, with a fecal odor and gave a 4+ guaiac test A blood culture was negative the carbon-dioxide combining power 12.2 cc. of N/10 H_2CO_3 per cent, and the chlorides 102.5 milli equivalents

X-ray examination showed a markedly distended abdomen The diaphragm was high in position The abdomen was filled with a large colon dis tended by air and feces. The visible distention involved particularly the sigmoid but also the descending and transverse colons, with the lat ter overlying the liver and reaching as high as the diaphragm Films of the forearm tibia, fibula

and lower end of the femur on each side showed no evidence of disease

On the third hospital day the patient received a 500 cc barium enema, none of which was expelled During the evening following the procedure about 200 cc of barium was removed by constant suction The stool was pink in color and gave a 4+ guaiac reaction, though no red cells were seen The next day she was given spinal anesthesia, and about ten minutes following this a moderate amount of gas was passed per rectum About fifteen minutes later a peristaltic pattern was visible over the abdomen Fluoroscopic examination twenty-five minutes following the anesthetic showed no remarkable change in the size of the colon or in the amount of barium present Throughout the entire procedure the patient displayed no untoward reaction, her general condition remained the same Wangensteen drainage and rectal suction were instituted, and a small transfusion was given The next day, in spite of all therapeutic measures, the temperature, pulse and respirations rose rather precipitously and she died on the evening of the sixth hospital day

Differential Diagnosis

Dr John Stewart Perhaps some of the radiologists will comment on this film, but the description as given sounds adequate We see a hugely dilated colon with an elevated diaphragm I do not see any loop of small bowel, and apparently only the colon was dilated

It seems that there are two central features in the clinical picture mental deficiency and abdominal enlargement These two findings may or may not be related Whenever we see a child with mental retardation and abdominal enlargement we naturally think of the possibility of cretinism, but there seems to be very little evidence to support such a diagnosis in this case The x-ray appearance of the bones apparently is normal There had been no failure in closure of the fontanelles, and other points in the physical examination are not consistent with a diagnosis of cretinism Therefore, we are confronted with the problem of determining the cause of abdominal enlargement in a child who obviously was a Mongolian imbecile Presumably the mental retardation was due altogether to the Mongolism

Abdominal enlargement in a child must always suggest the possibility of tuberculous peritonitis This disease presents a varied picture, just as the lesion is varied, and it may run a protracted course In this particular case, however, there were no palpable abdominal masses which might be inflammatory products of the tuberculosis There was no evidence of ascites and, further, the x-ray films show that the abdominal enlargement was due to a dilated colon Therefore, it is not necessary to suppose the enlargement of the abdomen came from peritoneal exudate or masses. The results of the tuberculin test are not given Such information might be of value in a child of this age, but on the whole I see very little on which to make a diagnosis of tuberculous peritonitis

The problem then reduces itself to consideration of causes of megacolon in a Mongolian imbecile The three possibilities which occur to me are celiac disease, chronic intestinal obstruction from some definite organic lesion, and Hirschsprung's disease or idiopathic dilatation of the colon I suspect that the dilatation of the colon had been present since early infancy I should not want to attempt to discuss celiac disease authoritatively for you, but it seems to me that in this case there was a good deal of evidence against such a diagnosis, including the absence of the typical fatty or fermentation stools, the fairly good nutrition that this patient showed and the lack of any chronic disturbance in calcium or phosphorus metabolism as shown by the normal appearance of the bones in the x-ray films The character of the stools is an important point in excluding the diagnosis of celiac disease in this case Chronic obstruction of the large bowel from a definite organic lesion, such as a mucosal diaphragm in the region of the rectosigmoid, cannot be excluded, but there is good reason to suppose that there was no such organic obstruction in this case There had been an absence of bouts of abdominal pain and vomiting prior to the present illness The x-ray study of the colon would tend to exclude the presence of a definite obstructing lesion at the rectosigmoid, although this region is difficult to visualize in the colon, particularly in the presence of a redundant dilated colon That leaves us with the diagnoses of Hirschsprung's disease and Mongolism

Then the question of the explanation of the terminal illness comes up Two complications that are apt to be encountered in a case with a dilated stagnant colon, namely acute obstruction, as from volvulus, and infection and ulceration in the colon I see very little to suggest the former in this case. The duration of the present illness and the x-ray studies tend to exclude volvulus However, I do think it quite likely that the patient developed infection and ulceration, and very likely perforation, in the dilated colon

If there was perforation of an ulcer at what time did it take place? The symptoms of the present illness proper, with increasing abdominal enlargement, increasing constipation and abdom

il pain, fever and the vomiting of material uch had a fecal odor and a positive guaiac reac n, might depend on the development of a local itonitis about a perforation, perhaps two weeks ore admission. Then we should have to sup- e that diffuse peritonitis developed in the hos- il while the patient was under study and my es would be that such was the case. Whether not there was a terminal pneumonia, I am un e to say on the insufficient evidence that is sub- ted However, I should say that this was rschsprung's disease in a Mongolian idiot, that ction and ulceration of the colon eventually eloped and that death came about from perfora i and peritonitis

DR. HAROLD L. HIGGINS I should like to ask Stewart what he thinks about the giving of barium enemas and the significance of no inking in the size of the colon following spinal sthesia

DR STEWART Spinal anesthesia was given, of rse, as a test to determine whether there was autonomic imbalance. It sounds to me as if test in this case was rather equivocal There some appearance of a visible peristaltic pattern rward, but on the other hand there was no y evidence of shrinkage of the colon I do believe the results help me one way or the r in the diagnosis of this case

DR. ARTHUR W ALLEN Do you lay any stress he urinary incontinence in association with the gacolon?

R. STEWART I had attributed that to the men deficiency, but of course the presence of an in sic lesion in the cord which might disturb i bladder and bowel function would have e considered. But it does not seem to me that have any supporting neurological evidence on ch to make such a diagnosis.

R RICHARD S EUSTIS Do you think that fecal action following constipation which is so com i in Mongolian idiots could have produced the ruction? I think of Mongolian idiots as thor ily constipated, feeble minded children, and is a rather neglected child who had lived nemas The stools are described as small hard les. Why did she not have a fecal impaction e the region they cleared up with the enemas re they gave the barium?

R. STEWART It seems entirely possible that she it have had fecal impaction, but I see no diag ic value in that point, inasmuch as she might had it with a dilated colon from any cause. the question might come up as to whether was any relation between the mental defi y and the development of megacolon At ious conferences Dr Mallory has dealt with that question in adults The inmates of insane asylums, for example, occasionally have mega colons without any disease of the spinal cord, I believe.

DR. HENRY H FAXON Do you not think it is surprising that the vomitus was black with a fecal odor and gave a 4+ guaiac test on the basis of your explanation of the picture?

DR. STEWART Yes, it is I do not see why there should be such a free movement of the intestinal stream in the reverse direction, but I assume that the blood was due to ulceration of the colon

DR. ROBERT LINTON I saw this patient on the wards and was partly instrumental in having ba rium enemas and spinal anesthesia given I do not believe that everything is known about mega colon that one would like to know There are two types, the congenital and the acquired This child was given spinal anesthesia in an attempt to see whether with release of the sympathetic in nervation we could get emptying of the colon, it reached to the nipple line and that theoretically should anesthetize the lumbar ganglia and splanchnic nerves The operation considered best at present for the relief of megacolon removes these nerves. In this case the spinal anesthesia failed to contract the bowel, but I do not believe that ruled out the sympathetic system I think the patient was so ill and had been sick so long that the colon just could not respond

DR. HIGGINS In connection with the question Dr Stewart raised as to the differential diagnosis of celiac disease and Hirschsprung s disease, I may comment that in celiac disease the abdomen shows marked and rapid variations in size. It may be very small in the morning and very large in the evening In Hirschsprung s disease it tends to enlarge gradually until an evacuation occurs In making the differential diagnosis, we measure the abdomen twice a day

The child s being a Mongolian idiot probably has a bearing on the death A Mongolian idiot has notably poor constitutional resistance, and a rela tively minor intestinal disturbance or infection may prove fatal I think that death was quicker in this case for that reason The Mongolian idiot usually has poor muscular tone, I wonder if per haps the muscular tone might have affected the smooth muscle of the intestine as well as the skeletal muscle. However, one of the doctors at the Wrentham State School has told me that in their experience megalocolon and Mongolian defi ciency had not occurred together

The child s temperature was fairly normal un til about eight hours before death when it rapidly went up to 106°F The child was having a va ried blood pressure, ranging from 70 to 100 sys

tolic The last recording before death was 70, it seemed that a certain amount of medullary reaction with low blood pressure, poor circulation and a high temperature played some role in the immediate cause of death

Clinical Diagnoses

Megacolon
Intestinal obstruction with toxemia
Peritonitis
Mongolism
Polydactylism

Dr Stewart's Diagnoses

Hirschsprung's disease
Mongolism
Colonic ulceration with perforation and peritonitis

Anatomical Diagnoses

Congenital megacolon (Hirschsprung's disease)
Multiple ulcerations of colon
Mongolism
Polydactylism
Atrophic thymus

Pathological Discussion

Dr Tracy B Mallory Autopsy showed a large megacolon In addition there was incomplete rotation of the intestinal tract, so that the cecum was not in the usual place, and had not progresse any farther around than the right upper quac rant The peritoneal cavity was perfectly clea There had been no perforation On the oth hand the mucosal surface of the colon showe numerous ulcerations These were not very dee and did not seem very significant to us The was no pneumonia We found nothing exce these rather recent looking ulcers in the colo that would explain the fever The autopsy w limited so that we did not have a chance to e amine the pituitary gland or various other thin that might be of interest to look at in a Mo goloid We did make as careful an examinatio as we could to rule out spina bifida, and coul not find it

Dr Stewart Were there any definite lesion in the region of the left colon? Any obstruction

Dr Mallory No

Dr Eustis Was the colon empty or full?

Dr Mallory Moderately full

Dr Eustis Enough to cause obstruction an the vomiting of coffee-grounds material?

Dr. Mallory I do not know I should n want to say it was any fuller than it had bee for two weeks It certainly was still very full

Dr Margaret M Glendy Were the supr renal glands all right?

Dr. Mallory Yes The only endocrine glan in which we noted any abnormality was th thymus, which seemed atrophic

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THE APPROVING AUTHORITY

With the action of the Senate giving Senate Bill 395 leave to withdraw, there comes to an end for the time being, legislative discussion concerning the scope of the jurisdiction of the Approving Authority of Massachusetts for colleges and medical schools. The Authority was created by statute in 1936, the effective date of which was originally set at January 1, 1939 Bitter opposition on the part of some medical schools having been ineffective against the increasing popular demand for control of such institutions, a deferring of the effective date for three years more was sought ostensibly for the purpose of enabling the inferior schools to meet the presumably reasonable demands of the Authority Only two years were granted, but the prophecy of some of the protesters against extension has been fulfilled, namely, that the added time would be used in further attempts to make the Authority of no effect, instead of improving the schools This has been shown by the subsequent bills which have been introduced but which were not passed Many legislators have thought that the Authority, once created, should be given the opportunity to show what it could and would do before attempting to abrogate its powers.

It is not necessary to discuss the bills in detail, suffice it to say that they were worded in such a way that even some of the keenest legislators were deceived for they regarded the bills as perhaps unnecessary but quite harmless Who could object to a law which required that all examinations should be fair and just? But on some other words not only was no emphasis laid, but attention was distracted from them often by misstatements of fact.

Too little has been said about the Approving Authority and about the significance of its creation, which was an epoch-marking event for Massachusetts Naturally, with the effective date set so far in the future, the Authority has had little to say for itself, and except for a general statement of certain requirements called for by the statute, has, to the best of our knowledge, made no decision of public record concerning medical schools. The critical decisions by the Board of Registration in Medicine, namely rejection of candidates for examination on the ground that they are graduates of schools not approved by the Authority, are not likely to be made until 1945 when the first candidates admitted to medical school after January 1, 1941, receive their degrees and make application to the Board

Reference has been made to the significance of the act creating the Authority It represents a new attitude on the part of the Commonwealth toward medical schools There is recognition that a medical school is a quasi public institution, with responsibilities not merely to those who control it and to its customers, but also to the public, with whom its former customers are to traffic for their health and their lives Only a governmental agency, under statutory direction, can effectively

see to it that such an institution properly discharges its responsibilities

Another significant feature of the new legislation, which some have considered of greatest importance, is the introduction of the Department of Education into the evaluating body It is true that the Commonwealth maintains no medical schools, but colleges giving the required premedical education are also to be subjected to scrutiny and for this function the commissioner of education should be well qualified

It is well indeed that the health of the people of Massachusetts should have better protection It is especially a matter for satisfaction that machinery has been created and set in motion to give as much health protection through the practice of medicine as exists in any other state Too long has Massachusetts been truly designated as a "dumping ground" for physicians of poor grade Reports from the Board of Registration in Medicine indicate that at least half the candidates they must examine would not be admitted to examination in any other state No wonder that no other state will reciprocate with Massachusetts in regard to licenses to practice medicine

The task before the Approving Authority seems rather simple, though unexpected difficulties may later come to the surface Undoubtedly so long as it is possible to make money by giving a medical education, efforts will be made to repeal or nullify the Massachusetts law, but no state that we know of has recalled such approving authority, once given We await with interest reports of the activity of the Approving Authority of Massachusetts

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LOOK BEFORE YOU LEAP

The water hazard—the danger of deaths from drowning—has always been recognized as one of our summer liabilities, but a liability that can conceivably be greatly mitigated, when suitable educational forces are put to work Swimming instruction, made universally available and begun at an early age, will be the most important of these forces, in addition to this, the proper type of publicity to awaken intelligent water consciousness will have its desired effect.

The Metropolitan Life Insurance Company, however, in its *Statistical Bulletin* for June, mentions another definite water hazard to which swimmers rather than non-swimmers, are exposed, and which is ordinarily unassociated with the danger of drowning This is the liability of serious injury from diving accidents, which result in at least two hundred deaths annually in the United States—practically all due to neglect of the simplest principle of caution

Analyzing the mortality records of one hundred policyholders who were killed in diving accidents it was found that 68 per cent died mainly because they failed to investigate the depth of the water or to estimate correctly the depth needed for a safe dive Most of these dives resulted in broken necks Frequently the victim had never before swum in the body of water in which he lost his life, some failed to take into account the difference in tides, others dove from boats that had drifted into shallow water

The next 18 per cent struck against submerged objects, usually rocks, in water which the diver had failed to examine before his plunge In the remaining 14 per cent certain other forms of carelessness were responsible for the fatal accident two persons diving simultaneously and striking their heads under water, striking a previous diver who had not been given enough time to emerge striking the water flat during a high dive, diving too close to a dock guard at a pier and striking it, striking the head against the side of a swimming pool, diving from the back of a friend into breakers

The conclusion is so obvious that no moral need be pointed out It is a simple matter of looking before leaping

MASSACHUSETTS MEDICAL SOCIETY

SECTION OF OBSTETRICS AND GYNECOLOGY*

RAYMOND S. TITUS M.D *Secretary*
330 Dartmouth Street
Boston

ERSION OF THE UTERUS OF WEEKS DURATION

rs. M. B., a thirty year-old woman, was admit to the hospital ten weeks post partum on 25, 1938, with a tentative diagnosis of sub-lution of the uterus For seven weeks follow the delivery of her second child there had a persistent brownish vaginal discharge with sional small amounts of bright-red blood. n there had occurred intermittent painless nal hemorrhages of moderately large amounts, icularly when at stool, with large clots form between the episodes of gross hemorrhage.

ie patient s past history, family history and re systemic history were all essentially negative. menia began at fourteen, were regular with a ity-eight-day cycle and lasted four days with ain. Her first baby had been delivered in an city by forceps and episiotomy following a hard labor The puerperium was said to been normal Her second baby was deliv on March 17, 1938, the delivery and puer im having been normal, except as noted above. admission the patient s general condition fairly good There was a paleness of skin and ous membranes The red-blood-cell count was ,000 with a hemoglobin of 45 per cent The l pressure was 148 systolic, 96 diastolic. Ab-nal examination was negative except for a t amount of lower abdominal spasm The ia was filled with clots and examination dis-d a total inversion of the uterus An iodo-pack was inserted to control bleeding

e following day a transfusion of 500 cc. of ed blood was given bringing the red-cell t to 3 050,000 and the hemoglobin to 55 per

the second day following admission under l novocain-pontocaine anesthesia, a Spinelli tion was performed The uterus was exposed vaginam the anterior cul-de-sac opened, the ior cervical ring cut and the incision extended the anterior surface of the uterus up to the us. The uterus was then reverted and the ie incision sutured Soft rubber T tubes inserted into the anterior and posterior cul-de sacs for drainage. A self-retaining catheter was inserted, and iodoform gauze packed in the vagina Five hundred cubic centimeters of citrat ed blood was given immediately after the opera tion The patient left the operating room in good condition

The postoperative course was essentially unevent ful There was a slight degree of abdominal dis tention, which cleared up in a few days The iodoform vaginal pack was removed on the sec ond postoperative day By the tenth postoperative day the red-cell count was 3,640 000, and the hemo-globin 60 per cent The patient left the hospital on June 11, fifteen days after admission

Comment In this case, indifference on the part of the patient or attending physician or both al lowed the condition of repeated small hemor rhages to continue for seven weeks without an ade quate diagnosis A red-cell count of 2,770,000 and a hemoglobin of 45 per cent are indicative of the amount of blood gradually lost Continued bleed ing during the puerperium demands vaginal ex amination The transfusion preceding operation, after a vaginal examination had disclosed the true diagnosis, was wise therapy The use of the iodo-form pack against the exposed bleeding uterine sinuses was also intelligent. The treatment of the case after it fell into intelligent hands was ideal.

DEATH

CHAMBERLAIN — THEODORE CHAMBERLAIN M.D., of Concord died August 8. He was in his seventy second year

Dr Chamberlain received his degree from Columbia University College of Physicians and Surgeons in 1895 He was former district medical examiner and consulting physician to Middlesex School and the Concord Reforma-tory

He was a former member of the Massachusetts Medical Society and a member of the Harvard Club of Boston.

His widow eight children, four grandchildren and a brother survive him

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CONVALESCENCE

Of your many friends and acquaintances who may have made you listen by the hour to the details of their operations or grave illnesses, I can safely wager that not one has said much about how long it was before he felt like himself again. An operation or serious illness is a drama — in which fear and worry play an important part. By comparison the slow period of getting well — which we call the convalescent period — seems of little importance. Convalescence is an anticlimax which gets little notice and almost no respect.

Actually convalescence is — contrary to popular impres-sion — every whit as important as the healing of the sur gical wound or the safe passing of the pneumonia crisis. For after damaged tissues have healed or infection has been banished the body itself must be given time in

* A "Green Light to Health" broadcast given by Dr F Dexter te Adam on Wednesday May 31 and sponsored by the Public Education Committee of the Massachusetts Medical Society and the Massachusetts Department of Public Health.

ries of selected case histories by members of the section will be d weekly Comments and questions by subscribers are solicited be discussed by members of the section.

which to recover Its exquisitely sensitive nervous system responds to every hurt to the body—like a weather vane to every breath of wind—and, what is more important, recovers slowly That is why, even when your appendix is out and the wound healed, or the fever of an infection is gone, you are still not well you may be weak, listless, without appetite, irritable and perhaps depressed Your nervous system has been disorganized and has not yet returned to normal. Muscular tone, too, because of inactivity and lack of exercise, is at its poorest. Resistance is at its lowest, debility at its highest.

Convalescence is the period in which the whole body—as apart from the special organ or part affected by disease—recovers from the shock of the operation or illness It is the interval in which lost nervous energy comes back and muscular tone is restored A sufficient period of recuperation is the deciding factor which makes the difference—all other things considered—between a complete or partial recovery from illness Since the body's supply of "pick up" power has been drained, the best insurance against the development of some complication or of an entirely different ailment is to take enough time off to get really well

It has been found that many anxieties and worries, and other forms of nervous disturbance, follow operations and illnesses if the patient is permitted to resume his ordinary life without a sufficiently long period of recuperation Every medical consultant sees such cases from time to time.

A typical instance of incomplete recovery is the case of a twenty five year-old school teacher, who consulted her physician because of weakness and frequent crying spells She was haunted by the idea that these were due to some dread disease. In fact, she was on the point of giving up her position A thorough examination revealed no organic trouble the heart, lungs and kidneys were normal, as were the blood tests, there was no evidence of hidden infection. Careful questioning revealed no family, economic or social problems that might account for her emotional upsets But, a month before, her tonsils had been removed, she had been discharged from the hospital in three days, and ten days later had returned to work To anyone familiar with the emotional and physical drain which follows any operation or illness, it was quite evident that she was suffering the consequences of too short a convalescence. When the young lady was told this, she protested Various of her friends, she said, had returned to work shortly after having had their tonsils removed without experiencing any trouble like hers She was sure there must be something else wrong However, she was persuaded to take a three weeks' vacation When she returned from this rest, a refreshed, healthy young woman, her weakness and depression entirely gone, she was willing to admit that perhaps going to work too soon had been the cause of her trouble.

I could tell you of many similar instances In serious illnesses such as pneumonia, for example, and in long surgical operations, the drain on the human system is very much greater The pain, fever, loss of sleep and inability to eat that accompany grave illness, the damage to the tissues of the body and loss of blood from an operation, the nausea and vomiting which often follow ether and other anesthetics, all these heavily tax the body Added to these physical factors are the emotional disturbances worry over the outcome of one's illness or operation, fear and worry about the doctor's, the nurse's and hospital's bills, anxiety over the welfare of one's family, one's job or the condition of one's business

Think for a moment of how fagged out and nervous you are after a night made sleepless by worry, a barking dog or a poor mattress Or how weak and irritable a week's bout with grippe leaves you Multiply these sensations a thousandfold and you will realize how miserable one is after the ordeal of a serious illness

Yet most of us, whether just out of the hospital or merely getting over a severe cold, expect to get out of bed and go back immediately *to* normal duties—perhaps driving a truck, pounding a typewriter or caring for a family of six We believe that now the bothersome appendix is out or the fever gone, we ought to have back our health and be as strong as ever But as has already been explained, that is far from true This kind of thinking is dangerous and may lead to serious trouble.

We must realize that getting over any illness requires time. Time and expense are the most difficult hurdles in the way of the convalescent. No rigid rule governing the length of recuperation can be laid down, depending on the nature of the case, it may take three weeks or three months for complete recovery As a rule, the ideal place for convalescence is a hospital, sanatorium or health resort, where proper diet, sufficient rest, quiet surroundings and perhaps supervised exercise are possible. But, to be satisfactory, such a place must be one in which peace of mind and rest for the spirit are also possible. Home sickness, worry over expense or unhappiness in the strange surroundings can nullify whatever beneficial effects such institutions may have. In such cases, the patient may be much better off convalescing at home, but only if he can be kept away from family cares and disturbances

One can compromise with almost any situation If it is not possible to put off returning to work, then the burden must be lessened by working only half-days at first, taking rest periods during the day and sleeping twelve or fourteen hours instead of the usual seven or eight.

Above all, the convalescent must put himself in the right frame of mind Do not expect to rise from a hospital bed restored to perfect health two weeks after an illness Be prepared to feel weak, nervous, irritable, know these feelings for what they are Nature's warning that the repairs are not yet finished and the engine not yet ready for you to step on the gas

* * *

Q Why is it that so simple a thing as a severe cold often leaves one depressed and weak?

A Even a cold starts the same physical and emotional processes which, in a much greater degree, cause the nervous irritability and muscular debility which follow more serious illness

Q Why does a person recovering from pneumonia, which is essentially a disease of the lungs, have other complaints such as poor appetite, digestive difficulties or profuse sweating?

A Disease, whatever its nature, attacks not only the particular organ or part—as in the case of pneumonia, the lungs To some extent all the other organs of the body are affected The battle with the disease has drained the body of all its resources, hence, all the other organs and parts are, for the time being, exhausted

Q Why does one often feel depressed or irritable after sickness?

A As I have said, the nervous system has also been burdened during the illness by such factors as pain, loss of sleep, perhaps insufficient nourishment and, especially, worry either over oneself, one's family or one's business.

is this nervous exhaustion that causes the irritability pression, tendency to cry or other signs of emotional turbance. The patient is left with no stamina either notional or physical

Q. My impression and I think it is a fairly general e, has always been that ten days to two weeks is enough r recovery from a severe illness or a surgical operation. ou said that such a period is not long enough. Why?

A. The amount of time you mention is sufficient only r the healing of the tissues which have been directly af cted by the disease or operation. This is not time ough for the patient himself to regain either his normal ental energy or his physical strength His storage bat ries have been exhausted. In order to work as well as ey formerly did they need to be completely charged by e magnetos of food sleep and exercise. If they are not lly charged you cannot depend on them to do the ings they were meant to do. The bells will not always ag when you press the button. It saves time to spend ne in getting really well after you have been really ck.

IISCELLANY

EW BUILDING AT THE SALEM HOSPITAL

The trustees of the Salem Hospital are proceeding with e necessary detailed plans for the erection of a maternity id children s building The building committee of the ustees, Walter E. Poor chairman, has given final ap oval this week to the general building plans, including ree complete stories and a fourth story of half the area. his building will extend southeasterly from the axis of e main building one hundred and ninety-three feet. It ill be forty-three feet wide in the main portion and ty-one feet wide in other sections.

The ground floor will contain a children s ward, in uding a play room, four private rooms, sixteen beds in ubicle units, a babies cubicle ward of six beds, a six-bed covery room, and an observation department with sepa te services and facilities. The usual technical and serv e facilities typical to hospitals will be available, such as ility rooms, bathrooms, nurses station diet kitchen and forth.

The second floor will be for ward and semi private aternity patients including accommodations for eight tients in two-bed rooms, twenty patients in four-bed ubicle-curtained wards, the usual service facilities, a rsery with cubicles for each baby an isolation depart ent with accommodations for four patients in single oms, and a waiting room.

On the third floor will be accommodations for private aternity patients, including seventeen private rooms, ting room waiting room all the necessary services two urseries for premature babies and an isolation nursery ll nurseries will be air-conditioned so that proper hu idity will be available for the babies.

The fourth floor will be devoted to the delivery suite, cluding two two-bed labor rooms, three delivery rooms, urses dressing room, doctors room and nursery for the ewborn babies.

This plan as outlined will have accommodations for nty-nine maternity patients and thirty two children, and ill in addition release the present facilities occupied by e maternity and children s departments for medical and rgical patients, thus relieving the crowded conditions in ese departments as well as providing the most modern cilities for maternity patients and children.

This completes the building program begun last year with the erection of an intermediate budding This con tains in the basement a large assembly room for lectures and conferences accommodating two hundred people, accessible through a separate entrance on the next floor a modern x-ray department with a deep-therapy room a radiographic room dark rooms a fluoroscopic room a cystoscopic room and office and on the floor above which is the main floor of the hospital a staff room with a large and comfortable library adjacent to it, a room for the interns and several consultation rooms. The corridor of this floor will be the main corridor connecting the entrance floor of the main hospital building with the new maternity building

CORRESPONDENCE

PREMARITAL BLOOD EXAMINATIONS IN NEW YORK STATE

To the Editor The New York State Legislature in 1938 passed a law requiring a physical examination including a standard serological test for syphilis on all applicants for marriage licenses within the State.

Several instances have been called to my attention in which residents of other states have had difficulties in securing marriage licenses in New York State because of misinterpretations of the law by themselves or their examining physicians. In order that such inconveniences may be avoided I should greatly appreciate it if you would through your journal inform the medical profession of your state of the provisions of the New York law

That part of the act as amended and effective July 1 1939 referable to these examinations reads as follows

Physician s examination and serological test of applicant for marriage license

(1) Except as herein otherwise provided, no application for a marriage license shall be accepted by the town or city clerk unless accompanied by or unless there shall have been filed with him a statement or statements signed by a duly licensed physician or by a commissioned medical officer of the United States army navy or public health service that each applicant has been given such examination including a standard serological test, as may be necessary for the discovery of syphilis, made on a day specified in the statement, which shall not be more than the thirtieth day prior to that on which the license is applied for and that in the opinion of the physician the person therein named is not infected with syphilis, or if so infected is not in a stage of that disease whereby it may become communicable.

The law further states that a standard serological test shall be a laboratory test for syphilis approved by the state commissioner of health and shall be performed by the state department of health or in the City of New York by the department of health of such city or at a laboratory approved for this purpose by the state department of health or in the City of New York, by the department of health of such city"

I offer the following comments relative to its interpretation

1 A duly licensed physician means any physician duly licensed to practice medicine in the state in which he resides or in which he maintains his office.

2 The date of examination is interpreted to mean the date on which the specimen of blood is taken

3 The state commissioner of health and the state department of health referred to mean the commissioner of health of the State of New York and the New York State Department of Health

4 Laboratory tests made as a part of premarital examinations for persons applying for marriage licenses in New York State, outside of New York City, as well as the laboratories in which these tests are performed, must be approved by the New York State commissioner of health For administrative reasons laboratories within New York State only have been approved for tests on applicants for licenses in the State exclusive of New York City

5 The Commissioner of Health of the City of New York has approved certain out-of-state laboratories for the performance of serological tests on persons applying for marriage licenses in New York City Requests for information concerning laboratories approved by the New York City Department of Health should be addressed to that department at Worth and Centre Streets, New Yorl City

Outline of procedures for examination of out-of state applicants for marriage licenses in New York State exclusive of New York City

1 Any physician duly licensed to practice medicine in the state in which he resides or in which he maintains his office may perform the necessary physical examination

2 The specimen of blood must be sent to an approved laboratory in New York State It is suggested that specimens be sent to the Division of Laboratories and Research, New York State Department of Health, New Scotland Avenue, Albany, New York, where examinations will be made free of charge.

3 The specimen should be labeled "for premarital examination"

4 The use of air mail is recommended when the specimen must be sent a great distance.

5 Upon completion of the test the laboratory will send the physician, in addition to the usual laboratory report, a certificate to the effect that the serological test was performed as a part of a premarital examination

6 If, in the opinion of the examining physician, the applicant is free from syphilis or does not have the disease in a stage which may become communicable, he should complete the certificate as indicated thereon

7 The certificate is given to the applicant who will submit it to the clerk when the marriage license is applied for

If these procedures are followed, there should be no difficulty in obtaining the license.

For further information relative to the marriage of persons in New York State, exclusive of New York City, communications should be addressed to the Division of Syphilis Control, New York State Department of Health, Albany, New York.

EDWARD S GODFREY, JR.,
Commissioner of Health

Albany, New York

A NOTE OF THANKS

To the Editor Retiring from the position of physicia in-chief, as I do on September 1 next, I take this oppo tunity to express my thanks to the many physicians wh since the Peter Bent Brigham Hospital opened its do for medical patients, have co-operated by answering follo up letters about their patients sent to the medical war of this institution Information, thus so generously giv to us, has been of great value in completing our recor oftentimes clearing up difficulties in diagnosis and i creasing our knowledge of prognosis I appreciate grea the trouble these men have taken to give to us inform tion about such patients subsequent to discharge from t hospital and utilize this method of expressing my gra tude.

HENRY A CHRISTIAN

721 Huntington Avenue,
Boston

REPORTS OF MEETINGS

HARVARD MEDICAL SOCIETY

A regular meeting of the Harvard Medical Society w held at the Peter Bent Brigham Hospital on April 25, wi Dr Elliott C Cutler presiding The speaker of the e ning was Dr Francis G Blake, Sterling Professor of Me cine at Yale University School of Medicine, whose subj was "The Clinical Use of Sulfapyridine in Coccal Inf tion"

Instead of the usual presentation of cases, Dr Blake a propriately recounted his first experiences with the seru treatment of pneumococcal infections while resident ph sician at the Peter Bent Brigham Hospital in 1915 that time, two interns contracted typical lobar pneumo while on duty After three anxious days, the typing w completed, and the first specific pneumococcal antiseru was administered at the hospital. Due to the delay instituting therapy, however, the results were sadly dis pointing, with one young doctor dying and the oth recovering only after a prolonged course complicated empyema Despite such a dismal failure, which was r an uncommon occurrence at that time, everyone is no acquainted with the vast improvements in the techn of typing sputum and blood, as well as in the process manufacturing and administering antiserums Dr Bla then turned to an evaluation of sulfapyridine in a co parable stage in its development. He said that he belie that the problem should not be complicated by the u of serum plus sulfapyridine during this probationary p riod He is further inclined toward the opinion that t drug is unnecessary when serum therapy is being em ployed in a given case. His main conclusions, therefo were based on statistics gathered from 51 typed cas of pneumococcal pneumonia treated solely with sulf pyridine and a scattering of small groups of other cocc infections The mortality among the pneumococcal pne monias was 5 8 per cent, one of the three deaths occurri in a patient in whom therapy was not instituted until th eighth day The majority of these cases exhibited marke decrease of fever within twenty-four hours, and in th remainder the fever subsided within forty-eight hour These statistics, though not numerically significant, a appreciably better than those in the serum treated cas due to types which are likely to respond favorably, an inestimably better than those in cases of all types fo which serum is available. For instance, the best result reported in Massachusetts are in Type 1 pneumonia wi a mortality of 8 7 per cent, whereas Type 2 pneumoni

which is considered favorable for serum treatment, still carries with it a mortality of 27 per cent. Despite the fact t mortality figures have been reduced by serum treat nt as much as 75 per cent in cases due to certain types number of survivors with sulfapyridine is much ter

r Blake's results in other coccal infections have not n striking, although only a few cases have been ted. Thus, he considers sulfapyridine no more effica- s than is sulfanilamide in combating hemolytic strep- ccal infections, and advises against its substitution in instance. Furthermore, the drug has shown nothing ecommend its use in staphylococcal infections, nor e the results in mixed infections been remarkable.

nce it has been considered that the efficiency of sulfa dine in combating infection might conceivably be pro- ional to its level in the blood stream the New Haven up has studied this problem. The dosage employed is gm. immediately and then 1 0 gm. every four hours nouth. On this regimen, 70 per cent of the patients a level in the circulating blood of 5 to 10 mg per cc. In thirty six hours, while 20 per cent show less 5 mg and 10 per cent are between 10 and 15 mg. ably the most important factor regulating this level e degree of acetylation of the sulfapyridine in the This therapeutically inactive derivative varies dly despite the mode of administration of the sulfa line, and the percentage of this form in any given nt is entirely unpredictable. Not only does the amount cetylation fluctuate, but also the rate at which this agation occurs, so that some patients show a gradual ase from 15 to 30 per cent in this form while others an immediate conversion of 50 per cent to the inac form which eventually rises to 80 per cent. The rela of the presence of large amounts of acetylated sulfa- line with untoward reactions has been suggested, is yet there is no conclusive proof that any such cor on exists. For example, there have been patients with gh percentage of the acetylated product who have n no unusual manifestations however those who appeared toxic invariably showed a rapid and high ersion.

e necessary or desirable level of sulfapyridine which ld obtain for prompt therapeutic response is another point. In Dr Blake's series a level as low as 3.5 mg 100 cc. was sufficient to bring about a satisfactory nse in a patient who was a known diabetic and in n treatment was not begun until the second day e have been 10 additional cases in which a critical ery occurred with a blood sulfapyridine of less than per 100 cc., while 2 failed to exhibit a satisfactory nse despite a level above 5 mg It is known there that although some cures occur when less than 5 mg 00 cc. of sulfapyridine are circulating in the blood n, such a concentration does not insure recovery

was often noted among the earlier patients that re- were not uncommon when chemotherapy was ntinued after a period of two or three days. It was ated by Dr Blake, therefore, that the administration e drug should be continued until about the seventh when some natural immunity may be expected.

e most obvious and frequent disadvantage of sulfa- ine is nausea and vomiting which occurred to some e in 60 per cent of those treated. In only one third s number, however was the result serious enough rrant substitution of parenteral for oral administra f the drug This unpleasant complication may occur ly as the fourth hour and lasts about four days. The anism involved is probably a central reaction rather than a local one on the gastric mucosa for parenteral injection does not obviate the difficulty This should not be accepted too categorically however for even parenterally administered fluids rapidly find their way into the gastro-intestinal tract.

Since regurgitation of the drug depresses its level in the blood some other mode of administration must be employed in such cases. The usual method at New Haven has been the use of hypodermoclysis twice a day Since sulfapyridine is not soluble in distilled water various vehicles were tested until it was determined that a 0 2 per cent solution of the drug in one containing 5 per cent glucose and 0.85 per cent sodium chloride would remain stable for four days at 16°C. This solution has given no untoward reactions, either by clysis or by the intravenous route. A combination of these two parenteral routes produces a rapid rise in the blood level and a good maintenance of it in critical cases. The variation in assimilation of sulfapyridine is not affected by parenteral injection, however

Other reactions observed by Dr Blake are entirely comparable to those which occur following the use of sulfanil amide but with the important addition of acute renal symptoms. Nine of his 130 patients experienced acute hematuria 4 of these with gross blood and violent colic. Some showed only microscopic blood and all recovered satisfactorily either after discontinuing treatment in the more severe instances or despite treatment in the mild cases. Another important toxic manifestation enumerated by the speaker included drug fever which occurs on the fifth to the eleventh day and may simulate serum sickness if serum therapy has been used Fourteen such cases have been diagnosed but no relation to the amount or duration of treatment could be determined. One case each of hemolytic and severe hypochromic anemia were reported, both the patients recovering promptly when sulfapyridine was omitted. Three patients showed moderate degrees of leukopenia which were prevented from progressing to agranulocytosis by prompt interruption of therapy He emphasized the tremendous importance of accurate daily hematological studies on patients receiving sulfa pyridine.

In commenting on the use of the drug in pneumococcal meningitis, Dr Blake pointed out the correlation between the level of sulfapyridine in the spinal fluid and blood with the culture of the cerebrospinal fluid. Although only 1 case had been treated, and that with the addition of serum It is significant that the culture remained negative when the level was greater than 5 mg per 100 cc. but was positive whenever the level dropped below that point due to discontinuance of intrathecal sulfapyridine.

In conclusion Dr Blake reiterated that sulfapyridine appears "extremely promising" in pneumococcal infections, but that due caution should be exercised lest it be used indiscriminately by those not aware of its potential dangers.

Dr O H. Perry Pepper of Philadelphia reported the results of a group of investigators who had organized a similar experiment in the twelve leading hospitals in that city These statistics concerned 500 cases treated with sulfapyridine exclusively In so far as possible, these cases were examined x-rayed typed and cultured under the jurisdiction of an official committee so that adequate data are available. Four hundred of these cases were typed the mortality in this group without positive blood cul ture was 7 per cent, while those with bacteremia showed a death rate of 22 per cent. In the 100 untyped or non-typable cases the mortality amounted to 10 per cent. These data agree very closely with those of Dr Blake.

Dr Pepper also said that the manufacturers had stated that there have been reports of recurrences occurring with the same type of pneumococcus after many weeks or months These are not relapses, since they usually occur long after convalescence has been complete Dr Pepper added a new reaction, namely severe mental reactions in about 3 per cent of the patients, no fatalities were recorded as being due to the drug

Dr Lewellys F Barker, after recounting a successful personal experience with sulfapyridine, reported on the progress being made in Baltimore with the drug Drs Marshall and Long have perfected a sodium salt of sulfapyridine so that an adequate dosage may be administered parenterally without the disadvantages of the large volume of fluid necessary with the relatively insoluble pure product. This new compound, however, is strongly alkaline and can consequently be given only by the intravenous route. That there is an inherent danger in this substance has been proved by the fall of blood pressure, decreased respiratory rate and depressed renal function in dogs given five times the usual maximum dose The amount necessary to attain an adequate level in human beings is only 0 05 gm per kilogram as contrasted with the toxic dose of 0.5 gm in the dogs Given in such doses in a 5 per cent solution, there is a rapid and equal distribution in the blood and tissues at a level of 5 to 8 mg per 100 cc. in a very few minutes Due to the potential toxicity of this sodium salt, it has not been used by the Baltimore workers except when specific indications exist. It should always be administered slowly (5 cc. per minute) and any leak into the tissues should be carefully avoided It has been used in very severe cases in two injections, six to eight hours apart, together with the usual dosage by mouth It also finds a place in cases in which there is poor absorption orally so that the temperature fails to drop below 101°F rectally and the blood level of the drug remains below 4 mg per 100 cc The final indication for its use is in cases in which there are severe nausea and vomiting

Dr Alvah H Gordon said that in using sulfapyridine at the Montreal General Hospital an attempt had been made to give the patients the best possible treatment. It was therefore determined not to continue its use if there was no fall of temperature within twelve hours in any proved case of pneumococcal pneumonia It is a significant commentary that only 3 of 68 patients required serum treatment under this regimen The mortality rate in all cases treated with sulfapyridine was 8 8 per cent, which is half that for all typable pneumonias under serum treatment. Dr Gordon stated that they had also experienced difficulty in producing and maintaining proper blood levels, but he also observed that lack of a supposedly satisfactory level does not preclude the possibility of recovery, nor does an unusually high level always assure a favorable prognosis

Dr Warfield T Longcope reported on work carried on at Johns Hopkins Hospital with Dr W Barry Wood Of 83 cases of pneumonias treated with sulfapyridine since February, the mortality was 4 8 per cent. The virulence of the infection, however, was not high during this period for only 12 per cent exhibited bacteremia, in contradistinction to 30 per cent earlier in the year The average duration of convalescence was 3 3 days with chemotherapy and 6 7 days with serum treatment. Dr Longcope noticed that patients treated with sulfa pyridine do not look detoxified even when their temperature drops at first. Furthermore, careful x ray examinations show evidence of a further extension of the pathologic process when the temperature has already returned to normal Both these facts lend support to the theory that the infection is only in abeyance during early convalescence and that relapses are prone to occur during this period if treatment is interrupted

Dr Longcope also reported some illuminating experiences with the urinary complications of sulfapyridine therapy It has been shown in animals that the acetylated compound is precipitated in large amounts in the kidney pelves One of their unsuccessful cases, in which the patient failed despite an adequate initial response and the maintenance of a high blood level, exhibited great numbers of these crystals in the ureters and kidney pelves. Indeed, the finding of such crystals in concentrated urines of dehydrated patients is not uncommon in sulfapyridine treatment. Dr Longcope believes that despite the enormous encouragement offered by various reports, sulfapyridine will not be relied on exclusively It does seem to him, however, that the combination of this chemotherapy with refined antipneumococcus serum may materially alter the outlook for pneumonia

Dr Duncan Graham, of Toronto, admitted that he has never been quite satisfied with the serum treatment of pneumonia, and does not consider the addition of sulfa pyridine gratuitous He originally intended to maintain a serum treated group as a control but soon abandoned the plan when it became obvious that the mortality was so high in the control group that these patients should not be denied the benefits of sulfapyridine. Of 100 cases with and without bacteremia, Dr Graham obtained a mortality of 10 per cent, with no deaths under forty years of age. His dosage for the first twenty four hours was somewhat larger than that advocated by others, his patients receiving 2 0 gm every four hours for six doses. This usually gave a blood sulfapyridine level of 7 to 8 mg. per 100 cc, and it was believed that cases with levels above 10 mg should be suspected as being due to renal damage He added that, if no decrease in temperature occurs in twenty-four to thirty-six hours, one should suspect that either a mixed infection or some complication is present. On the other hand, a rising temperature during the course of treatment usually indicates drug fever An occasional patient with leukopenia may develop a fever due to decreased resistance, but this fever should fall again when the leukocyte count recovers Thus, careful leukocyte counts are of inestimable value in determining the etiology of certain bizarre reactions. Dr Graham added that he also had encountered troublesome hematuria among those treated with sulfapyridine. No liver damage was in evidence, however, and the bile in the urine disappeared under treatment.

Dr Alfred W Harris concluded the summary with a short resume of the cautious use of sulfapyridine at the Peter Bent Brigham Hospital He said that the drug had been used, in alternation with sulfanilamide, only in cases for which serum was unavailable. There was only 1 death in 18 patients, while in the sulfanilamide treated group 4 of the 32 cases ended fatally

The consensus among this group of men, each of whom varied in the intensity of his enthusiasm, seemed to be that an indispensable weapon has been added to the armamentarium for fighting pneumococcal pneumonias, but that it remains problematical whether sulfapyridine will entirely supplant or merely complement the still progressing serum therapy

SOCIETY MEETINGS AND CONFERENCES

Calendar of Boston District for the Week Beginning Monday August 21

Tuesday August 22

10 a. m.–12:30 p. m. Boston Dispensary tumor clinic.

Friday August 25

10 a. m.–12:30 p. m. Boston Dispensary tumor clinic.

Saturday August 26

10 a. m.–12 m. Staff rounds of the Peter Bent Brigham Hospital. Conducted by Dr. Robert T. Monroe.

*Open to the medical profession.

August 30–September 2.—Seminar in Physical Therapy. Page 857 issue of May 18.

September.—Boston Psychoanalytic Institute. Page 450, issue of September 22, 1938.

September 4–6.—Institute for the Consideration of the Blood and Blood-Forming Organs. Page 941 issue of June 1

September 4–6.—Institute at University of Wisconsin Medical School. Page 160, issue of July 27

September 5–8.—American Congress of Physical Therapy. Hotel Pennsylvania, New York City. Page 857 issue of May 18.

September 11–15.—American Congress on Obstetrics and Gynecology. Page 938, issue of December 8

September 14–16.—Biological Photographic Association. Page 941 issue of June 1

September 15–28.—Pan-Pacific Surgical Association. Page 863 issue of November 24.

October 23–November 3.—New York Academy of Medicine. Page 977 issue of June 8.

Fall, 1939.—Temperature Symposium. Page 218 issue of February 2.

December 2.—American Board of Obstetrics and Gynecology. Page 1019 issue of June 15

January 6, June 8–11, 1940.—American Board of Obstetrics and Gynecology. Page 160, issue of July 27

March 7–9, 1940.—The New England Hospital Association. Hotel Statler, Boston.

May 14, 1940.—Pharmacopoeial Convention. Page 894 issue of May 25

June 7–9, 1940.—American Board of Obstetrics and Gynecology. Page 1019 issue of June 15

BOOK REVIEWS

Problems of Ageing Biological and medical aspects Edited by E. V. Cowdry. 758 pp. Baltimore: Williams & Wilkins Co., 1939. $10.00

Professor Cowdry, widely known as a scholar and teacher, is to be warmly congratulated for his successful editing of this valuable book, to which twenty-five eminent scientists have each contributed a chapter and which was sponsored by the Josiah Macy Jr., Foundation. Professor Cowdry writes in the preface: "The opportunity to bring to bear on the problem the experience and points of view of many specialists working together in a constructive way has been unrivaled." Mr. Lawrence K. Frank writes in the foreword: "The problem of ageing therefore is not a purely biological question, but has large cultural, social and psychological implications. Single cause and effect relationships can scarcely be considered in such total organic interactions as they must be supplemented, perhaps replaced, by a broader conceptual picture of the functioning organism as a 'field' (to borrow the term from physics) in which the totality and the parts are dynamically interrelated and therefore are continuously reacting to each other and to the environment." Professor John Dewey of Columbia University writes in the introduction: "Biological processes are at the roots of the problems and of the methods of solving them but the biological processes take place in economic political and cultural contexts. We need to know the ways in which cultural contexts react back into biological processes as well as to know the ways in which the biological processes condition social life. This is the problem to which attention is invited."

The quotations offered the reader give merely a glimpse of the importance of the material presented by the contributing authorities. It is impossible at this time to give a detailed review of each chapter, however much stimulation will come to the reader by noting the title and author of each chapter: "Ageing in Plants" William Crocker; "Senescence and Death in Protozoa and Invertebrates" H. S. Jennings; "Ageing of Insects," L. O. Howard; "Ageing of Vertebrates," T. Wingate Todd; "Human Cultural Levels," Clark Wissler; "Longevity in Retrospect and in Prospect," Louis I. Dublin; "Cardiovascular System and Blood," A. E. Cohn; "Lymphatic Tissue," E. B. Krumbhaar; "Digestive System," A. C. Ivy; "Urinary System" Jean R. Oliver; "Skeletal Locomotor System and Teeth" T. Wingate Todd; "Ageing of the Skin," F. D. Weidman; "The Thyroid, Pancreatic Islets, Parathyroids, Adrenals, Thymus and Pituitary," A. J. Carlson; "Female Reproductive System," Edgar Allen; "Male Reproductive System," Earl T. Engle; "Changes in Personality and Psychosexual Phenomena with Age," G. V. Hamilton; "Ageing of the Nervous System," Macdonald Critchley; "The Eye, Jonas S. Friedenwald; "The Ear," Stacy R. Guild; "Psychological Aspects of Ageing" Walter R. Miles; "Chemical Aspects of Ageing" C. M. McCay; "Ageing of Homeostatic Mechanisms," Walter B. Cannon; "Ageing of Tissue Fluids," E. V. Cowdry; "Ageing Processes Considered in Relation to Tissue Susceptibility and Resistance," W. deB. MacNider; "Ageing From the Point of View of the Clinician" Lewellys F. Barker.

A most useful feature of this book is the inclusion of a summary and a list of references at the end of each chapter. The illustrations are well chosen and there is an excellent index. This book becomes indispensable to everyone who would understand the problems of ageing. It is further recommended to all students of biological thought as a book which merits study and constant reference.

The Newer Knowledge of Nutrition E. V. McCollum, Elsa Orent-Keiles and Harry G. Day. Fifth edition entirely rewritten. 701 pp. New York: The Macmillan Co. 1939. $4.50.

This book in its fifth edition is devoted to the problems of nutrition of the body and has been written by three members of the faculty of Johns Hopkins University. The fourth volume was published in 1929 but was soon exhausted and has been out of print for several years. Since then the knowledge relating to the nutrition of human beings has been enriched by the discovery of many facts by research workers in many fields, and the authors have revised and rewritten the material hitherto published with the addition of more recent contributions to the subject.

The book opens with a résumé of the historical background of the works of earlier years which led to the present understanding of how health is maintained and prepares the reader for the unfolding of the mysteries which seemed beyond solution for many generations when the knowledge of those earlier periods was not founded on scientific study but generally on experiments of trial and error. In the second chapter the methods employed by Magendie, Vott and many other workers for learning about the essential nutritive requirements of the body are described, with the associated implications when the individual is deprived of these important elements and in the next nine chapters the carbohydrates, lipids, proteins, amino acids and mineral elements are given their appropriate places in the nutritional scheme.

Then follow twelve chapters devoted to the vitamins,

in which there is convincing evidence of the great advances which have followed careful study of each of the long list of these elements now recognized Even so it is plainly stated that, although the source and behavior of vitamins have been made clear, in many instances there yet remains a great deal to be accomplished in clearing away the uncertainties about some of them, although chemical studies have succeeded in establishing the formulas of many These chapters will instruct the biochemist more than the average physician, although the therapeutic value of each vitamin is set forth

Later chapters describe the dietary properties of foodstuffs, with explanations of the causes of normal and perverted appetites, and the foods of people living in various regions of the earth The chapter on the essential nutrition of the teeth and the evil effects of caries is of especial interest to civilized people

This book is a valuable addition to the literature pertaining to human well being, and aside from those parts of especial interest to research workers, the practical aspects of the newer facts set forth can be utilized by the average reader because there is a careful avoidance of too many technical terms

Where illustrations, graphs and tables help to make clear the subject under discussion they are freely used and are well constructed Every medical student, doctor and dentist should have this volume available for study

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Chronic Intestinal Toxemia and Its Treatment With special reference to colonic therapy James W Wiltsie. 268 pp Baltimore William Wood & Co, 1938 $3 00

This book is an attempt to indict the colon as a focus of infection and as a source of chronic intestinal toxemia and to prove that colonic therapy, particularly colonic irrigation, is a rational and effective method of treatment for chronic infection This is a difficult task in these days when colonic irrigation has been so generally discredited, and in spite of sixteen disjointed chapters, it is not accomplished The book is verbose and illogical, and although citations are used from 180 papers concerning the colon, in most instances their authors would unquestionably fail to subscribe to their application to this context. The book was obviously intended to place the procedure of colonic irrigation on a scientific basis — an accomplishment which cannot, however, be granted by the reviewer

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Laboratory Manual of the Massachusetts General Hospital Francis T Hunter Third edition, thoroughly revised 119 pp Philadelphia Lea & Febiger, 1939 $1 75

In 1922, a group of medical interns at the Massachusetts General Hospital did a useful bit of work Drs R. R. Wheeler, Joseph Stokes, J E Wood and Isaac Starr prepared a pocket outline of the routine laboratory work done by interns in this hospital They received sage editorial advice from Drs R. I Lee, W H Smith and A V Bock The upshot of the matter was an attractive booklet which became guide and friend to many interns and practitioners

In 1928, Drs Wheeler and F T Hunter prepared a second edition of this outline It was short, attractively dressed in flexible cover so as easily to fit into one's pocket, not too expensive, and thoroughly readable. It was favorably reviewed by such authorities on medical literature as the *Journal of the American Medical Association* (92 256, 1929) and the *Archives of Internal Medicine* (43 570, 1929) Each said about the same thing that the book was not intended to cover its subject matter exhaustively but to describe in few words how to carry out different essential procedures with speed and accuracy and that it accomplished this aim with notable skill

The third edition brings the manual up to date. It contains nineteen pages more than the second edition but no wonder, considering the various laboratory innovations which have been introduced in recent years It continues to strive for simplicity and directness It is bound to prove popular for it contains so much in the way of practical information admirably presented

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Science in Progress Edited by George A Baitsell. 32[illegible] pp New Haven Yale University Press, 1939 $4 00

These are semi popular lectures given under the auspices of the Sigma Xi Society They serve as an excellent means for not only popularizing science but also bringing to the attention of physicians important advances in allied fields of medicine. The most useful papers from this point of view are those by W M Stanley, of the Rockefeller Institute for Medical Research, on "Recent Advances in the Study of Viruses," L. O Kunkel, also from the Rockefeller Institute, on "New Views in Virus Disease Research," Karl E Mason, from Vanderbilt University School of Medicine, on "Vitamins and Hormones," R. R Williams on "The General Role of Thiamin in Living Things" and Francis G Benedict on "Animal Metabolism. From mouse to elephant." Other papers consider "Internal Secretions in Reproduction," "Recent Developments in Our Knowledge of Chromosome Structure and Their Application to Genetics" and "Electrical Potentials of the Human Brain"

Williams's work on thiamin is well known as he was the first to synthesize this vitamin Benedict's paper on animal metabolism is not only interesting and constructive but also amusing, as he tells in a delightful manner his twenty-five-year search for an elephant that could be used for metabolic studies He finally found one while walking along a street in New York, and this elephant proved to be valuable in his research, although his work was not without considerable difficulty As an example of persistency in research, Benedict's elephant work has rarely been surpassed.

All these papers are of a high standard and constitute, as Professor Harlow Shapley says in the preface, "a significant contribution to the panoramic view of science from which men must build their vision of the future."

The Circulation of the Brain and Spinal Cord A symposium on blood supply The proceedings of the Association for Research in Nervous and Mental Disease, New York, December 27 and 28, 1937 790 pp Baltimore Williams & Wilkins Co, 1938. $10 00

This is a large book containing the papers given at a meeting of the Association for Research in Nervous and Mental Disease in December, 1937, under the chairmanship of Dr Wilder Penfield, of Montreal The volume summarizes our present-day knowledge of cerebral circulation In addition to the reports of research, a critical discussion of the symposium is given by Dr Stanley Cobb. This last chapter is concise, timely and in every way admirable. To the reviewer, this volume is the best of the long series published by the association and augurs well for the continuation of the yearly reports of this unique organization, dedicated to co-ordinated research

The New England
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TRANSIENT RECURRENT BUNDLE-BRANCH BLOCK*

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TRANSIENT bundle-branch block associated with organic heart disease is no longer considered an infrequent electrocardiographic finding Lomeau et al [1] were able to collect 58 cases from the literature and added 13 cases of their own Since then other cases have been reported[2, 3] and we have been able to select 18 additional cases from the files of the Heart Station at the Rhode Island Hospital The tracings from one of these patients proved of such interest under various physiologic conditions that they were made the subject of the present report

CASE REPORT

H. B., a 79-year-old man entered the Rhode Island Hospital on December 20 1938 and was discharged February 12, 1939 On admission he complained of increasing frequency of defecation of 1 month's duration. He stated that he had a desire to move his bowels every 1 or 2 hours but passed only small amounts of feces and frequently nothing but flatus. He had noticed occasional mild colicky lower abdominal pain. For the 2 weeks prior to entry tenesmus had increased. There was no history of melena or weight loss The past history was noncontributory except for a story of moderate exertional dyspnea.

On examination the patient was a well-developed man who was neither dyspneic nor orthopneic. The lips were slightly cyanotic and the neck veins moderately distended. The chest was emphysematous There was diminished resonance and moist rales at the left base posteriorly The apex impulse was visible and palpable 12 cm. to the left of the midsternal line in the 5th interspace. There was a marked systolic thrill best felt at the 4th left interspace. The area of cardiac dullness extended out to the left. The heart sounds at the base were distant. A loud, rumbling systolic murmur, best heard at the apex, was transmitted to the left axilla and over the entire precordium. The peripheral vessels were patent, markedly thickened and tortuous. The blood pressure was 130/60 There was slight pitting edema over the sacrum and ankles. The liver edge was non-tender and just palpable below the right costal margin. On rectal examination there was a large annular growth constricting the lumen of the bowel. On proctoscopic examination a cauliflower type of tumor mass was visible 9 cm. from the anus. It encircled the rectum except on the posterior wall and was about 5 cm. in length A biopsy revealed adenocarcinoma of the rectum

The laboratory findings were hemoglobin 85 per cent, red-cell count 4,500 000 white-cell count 6200 with 72 per cent polymorphonuclears. Blood Wassermann and Hinton tests were negative.

A teleroentgenogram taken on January 24 revealed slight enlargement of the cardiac silhouette in its transverse diameter There was marked sclerosis of the arch of the aorta

The first electrocardiogram (Fig 1*A*) taken in the morning of December 21 revealed an irregular action due to auricular extrasystoles. The auricular waves were broad in Lead 2 and the A V conduction time was 0.20 second. For the most part the record revealed a typical left bundle branch block (new terminology) with a rate of 90 per minute and a QRS interval of 0 13 second. Following a slightly prolonged diastolic pause occurring after the auricular ectopic beats there appeared a beat showing an intraventricular conduction defect of lesser degree (arborization block) The next electrocardiogram (Fig 1*B*), taken in the afternoon of the same day followed 3 hours of oxygen administration at a rate of 3 l. per minute. The action was regular the rate 75 per minute and the conduction time 0 20 second. The auricular waves in Lead 2 were broad and notched and the left-axis deviation was present. The tracing revealed interesting transitions between intraventricular conduction defect of lesser degree, bundle-branch block and normal intraventricular conduction

The electrocardiogram (Fig 2*A*) taken in the afternoon of December 23 reveals the patient's normal record. The action was regular the rate 75 per minute and the conduction time 0.20 second the auricular waves were broad and notched in Lead 2 and left-axis deviation was present. Figure 2*B* gives the record taken 45 minutes later and a half hour after the administration of 1/75 gr of atropine sulfate hypodermically It shows a typical left bundle-branch block with a rate of 91 per minute and a conduction time of 0.20 second. The record in Fig 2*C* was taken several hours later and directly following the intravenous injection of 0.24 gm. of aminophyllin. A record taken a half hour later revealed no change. The bundle-branch block was still present the next day and was not influenced by the administration of 1.5 cc. of coramine hypodermically 1/100 gr of nitroglycerin sublingually or 50 per cent dextrose intravenously

Between December 23 and 29 several records were

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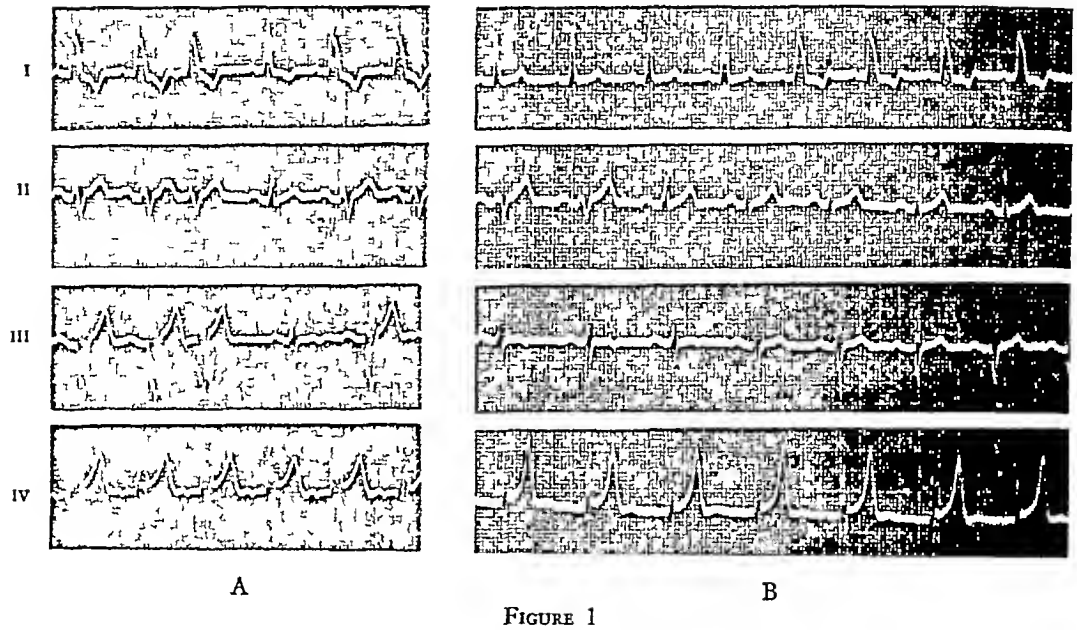

FIGURE 1

A Original record (December 21, 1938)
B After three hours of oxygen administration

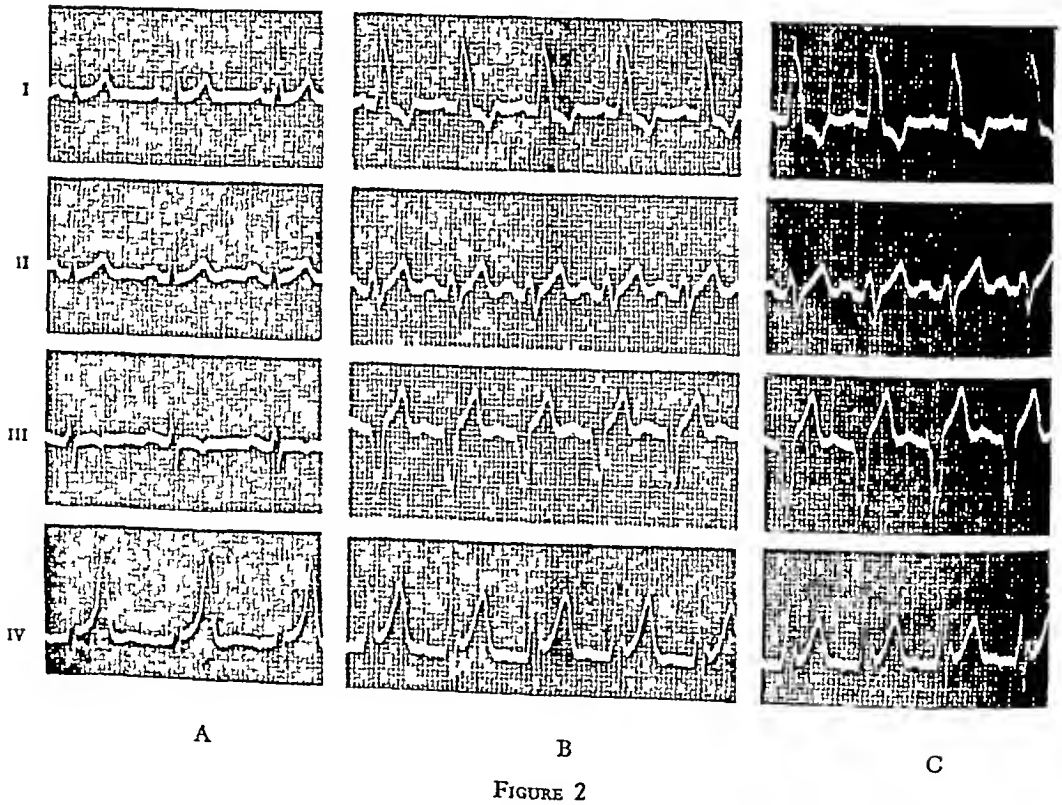

FIGURE 2

A Normal intraventricular conduction (December 23, 1938)
B After administration of 1/75 gr of atropine sulfate
C After injection of 0.24 gm of aminophyllin intravenously

taken revealing interesting transitions between bundle branch block and normal intraventricular conduction. On December 29 the tracing (Fig 3*A*) was normal in the first two leads. Lead 3 shows the gradual transition from normal conduction through incomplete to complete bundle-branch block. Unfortunately no further records were taken until January 3. On December 31 the patient was operated on a colostomy being performed under local anesthesia. An electrocardiogram (Fig 3*B*) taken January 3 revealed a record quite similar to that taken on December 23 block to normal intraventricular conduction the tracing did not change.

Figure 5 a record taken January 13, shows the effect of right carotid-sinus pressure on the tracing during normal intraventricular conduction.

This case of transient, recurrent bundle-branch block developed several interesting changes under various physiologic conditions that appear worthy of comment. Excluding the rarer types of paroxysmal bundle-branch block accompanied by short P R intervals occurring in otherwise healthy individuals who are subject to paroxysms of auricular tachycardia those observed in certain toxic and infectious states such as diphtheria and thyrotoxicosis, and those associated with increased myocardial strain as in paroxysmal tachycardia the greater number of cases are due to an underlying lesion of the heart muscle. That the transient nature of the conduction defect is due to some physiologic disturbance was originally suggested by Cohn and Lewis[4]. Since then, a considerable volume of literature has accumulated in attempts to explain this disturbance.

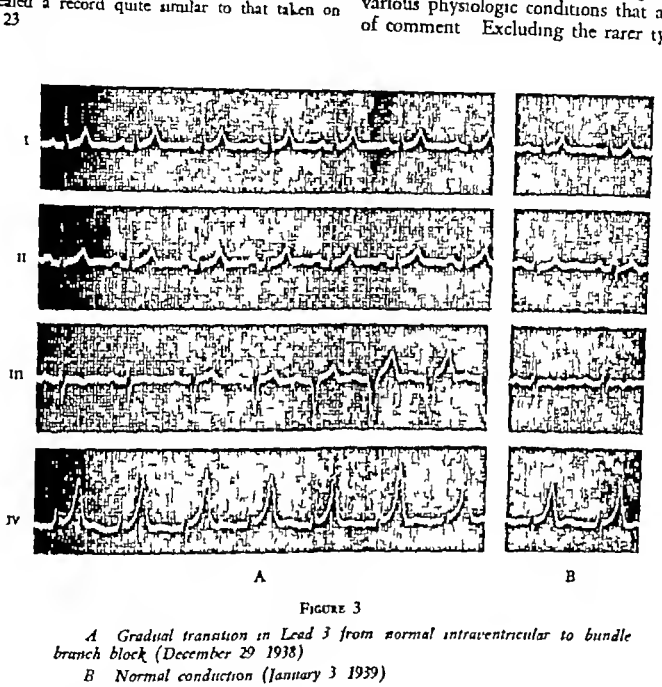

FIGURE 3

A Gradual transition in Lead 3 from normal intraventricular to bundle branch block (December 29 1938)

B Normal conduction (January 3 1939)

During the patient's hospital stay four records were taken showing the effect of carotid sinus pressure. On three of these occasions bundle-branch block was originally present and changed to fairly normal intraventricular conduction associated with a slower ventricular rate during momentary carotid-sinus pressure, and reverted to the original bundle-branch block with a higher rate following release of carotid-sinus pressure. Figure 4*A* is a continuous strip of Lead 3 taken January 9 and is representative of the changes which took place during right carotid-sinus pressure. The white lines denoting application and release of carotid-sinus pressure were slightly delayed. In Figure 4*B* a record taken January 13 the action was regular except for a single transient bundle-branch block complex in Lead 3. The rate was 72 per minute there was slight slurring of the QRS complexes and left-axis deviation was present. Figure 4C is a strip taken shortly after 4*B* and immediately following mild bending exercise it shows the start and middle portion of a long strip of Lead 2. Following the transition from bundle-branch

Anoxemia. Clinically various investigators[5-7] have presented evidence showing the beneficial

effect of oxygen on impaired intraventricular conduction Experimentally, however, the intraventricular conduction tissues have been found particularly resistant to anoxemia by some workers [8–10] Figure 1*A* shows a distinct beneficial effect of oxygen on bundle-branch block, the trac- lar complexes many of which were preceded by short diastolic periods The latter believed that the functional changes in the ventricle were due to the accumulation of acid metabolites which were removed from the circulation during the longer diastolic pauses Figure 1*A* shows similar

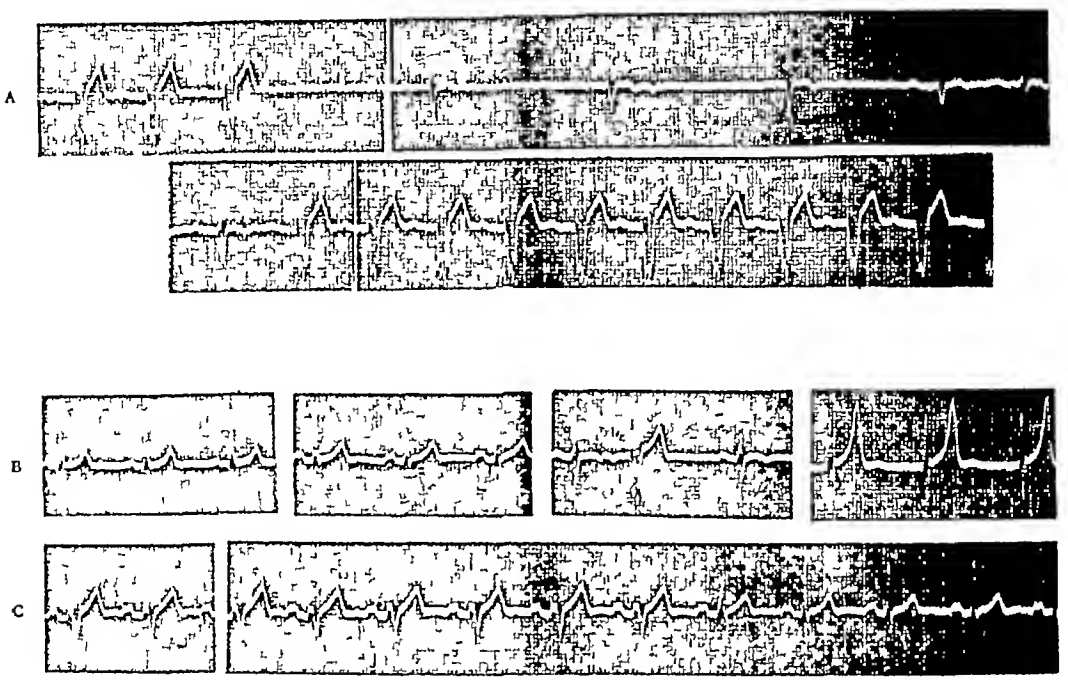

FIGURE 4

A Effect in Lead 3 of right carotid-sinus pressure on bundle branch block (January 9, 1939)

B Normal conduction except for transient bundle-branch complex in Lead 3 (January 13, 1939)

C Taken shortly after B and following mild exercise

FIGURE 5

Effect in Lead 2 of right carotid sinus pressure on normal conduction (January 13, 1939)

ing revealing long periods of normal conduction interposed between typical bundle-branch and arborization block

Nutritional and Metabolic Disturbances Lewis[11] first suggested that the products of asphyxia acted selectively on the conduction tissues, and Robinson[12 13] later reported cases of abnormal ventricu- improvement in the intraventricular conduction following prolonged diastolic pauses occurring after auricular ectopic beats The nature of the pathologic biochemical processes that are supposed to influence intraventricular conduction is still a matter for speculation Controversial experimental evidence has been brought forth to implicate the

:umulation of lactic acid,[14,15] the loss of phos-agen[16,17] and low myocardial creatine values as : significant factors

n recent years, the intravenous administration glucose and the high-carbohydrate diet have as-ned an important place in the treatment of car c disease.[18–20] Particularly favorable results bave :n reported following the administration of glu e in the treatment of angina pectoris,[18] and the igers of hypoglycemia on an impaired myo-dium bave been sufficiently stressed [0–23] It has :n suggested that owing to the narrowing as-iated with coronary artery sclerosis, the supply :arbohydrate to the myocardium may be reduced an inadequate level In our case, the adminis-:ion of 50 cc. of 50 per cent dextrose on one asion and 100 cc. on another failed to have ' effect on the existing bundle-branch block

lyocardial Fatigue Willius and Keith [1] have ed attention to cases showing transient, incom te bundle-branch block occurring with acute monary edema Baker[25] found that faulty con :tion through the bundle branches bore a certain ıtion to cardiac rate When the heart was slowed rest and digitalis, normal ventricular complexes ieared, when the rate was accelerated abnormal ıplexes reappeared Comeau et al [1] mention experimental work of Baschmakoff[26] showing t conduction could be normal at slower rates en only a narrow strip of conducting tissue ex d and assume a critical level, varying with 'siologic conditions and organic changes above ich bundle-branch conductivity will be impaired ure 4*A*, showing the transition from bundle nch block to normal conduction under cardiac ving resulting from increased vagal tone, and ure 2*B* showing the appearance of bundle nch block following decrease in vagal tone by ninistration of atropine, are consistent with this v

'agal Effect As a result of experimental and ical studies, it is now an accepted fact that vagus nerve supplies the S-A and A V nodes, right vagus supplying chiefly the S-A and the the A V node. The vagus nerve is also sup-ed to influence bundle-branch block Comeau l.[1] were able during marked S-A slowing pro-ed by carotid-sinus pressure to produce a sin complex similar to those found during periods ›undle-branch block The second complex fol ing onset of carotid-sinus pressure in Figure 5 ıough not identical, is quite similar to the al bundle branch complexes found in Lead 2, ı is consistent with Lewis's[27] statement that the us can depress bundle-branch conduction How r the release of vagal tone by atropine acted paradoxically, the increase in heart rate over shadowing any favorable effect on conduction

Action of Drugs Experimentally, it has been demonstrated by some investigators[28–30] that the ophylline has a dilating effect on the coronary arteries. Master et al [31] recently reported the tem porary disappearance of bundle branch block as a result of the intravenous administration of amino-phyllin in two patients with coronary occlusion Figure 2*C* shows, however, the failure of 0.24 gm of aminophyllin injected intravenously to influence the existing bundle branch block The dilating ef fect of the nitrites on the coronary arteries has been adequately demonstrated [2–33] but 1/100 gr of nitroglycerin dissolved under the tongue re vealed no effect on the bundle branch block after two- and ten minute intervals on two occasions. Furthermore, although numerous clinical and ex perimental observations [34–38] have demonstrated cir culatory improvement and an increase in coronary flow following coramine medication, the adminis-tration of 1 5 cc. of coramine on two occasions showed no effect on the existing bundle-branch block

SUMMARY AND CONCLUSIONS

While it is not possible to draw any definite conclusions from data obtained on a single case, certain facts stand out The patient originally had bundle-branch block associated with mild decom pensation Intraventricular conduction was bene fited by the administration of oxygen by the slow ing of the cardiac rate by bed rest and digitalis and by increased vagal tone. It was affected ad versely by increasing the cardiac rate through ex ercise and by abolishing the vagal effect by atropine. It was not affected by nitroglycerin, aminophyllin or coramine

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THE PHENOLPHTHALEIN TEST IN THE DIAGNOSIS OF GASTROINTESTINAL DISEASE*

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THE number of organic and functional diseases far removed from the digestive system which nevertheless display gastrointestinal symptoms seems infinite, and constantly challenges the diagnostic acumen of the attending physician Any continued experience with groups of patients exhibiting primarily digestive complaints soon teaches that the safest approach to such problems is that analogous to using the low-power objective of the microscope to survey a histological section before focusing with higher lens power on a smaller field Especially in the general practice of medicine, limited necessarily in the availability of refined and highly technical laboratory procedures, difficulty often arises in deciding whether a patient's abdominal pain, vomiting or diarrhea is due to intrinsic gastrointestinal disease, or to cardiorenal disorders, general metabolic or endocrine dysfunction, or to one of the common neuroses Therefore there is an obvious need for some simple test to determine the presence of gastrointestinal lesions Such a test would be useful in situations where x-ray studies of the alimentary canal yielded equivocal or unexpected findings, or where the cost of such an investigation would be prohibitive unless the presence of actual organic disease seemed highly probable Not infrequently an x-ray report of a deformed duodenal cap leaves unanswered the question whether the irregularity is due to adhesions, an old healed ulcer or an active lesion

Recently Woldman[2] made a preliminary report on the use of phenolphthalein as a diagnostic test in gastrointestinal disease The rationale of the test lies in the supposed fact that, when given in physiological doses, approximately 90 per cent of ingested phenolphthalein is excreted with the stool, a small portion appearing in the urine in a conjugated form, not reacting as an indicator on the addition of alkali If a break in the mucous membrane of the alimentary canal is present, it is believed that free phenolphthalein is absorbed, appearing in the urine as such, and producing the characteristic pink to red color in an alkaline medium In a study of 112 subjects 35 of whom had lesions in the stomach, duodenum or colon, the remaining 77 being controls, Woldman found that the possible error was less than 3 per cent for both positive and negative findings The promising results, the simplicity of method and the absence of untoward effects suggested that more extensive clinical application and evaluation were warranted Accordingly we have carried out the diagnostic phenolphthalein test in 203 patients,

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wing closely the original technic. All the :cts were medical or surgical patients on the ung ward services of the Beth Israel Hospital, diagnoses were based on careful clinical and atory study, and when possible on operative ostmortem data

METHOD

stock solution was prepared, containing 10 of phenolphthalein dissolved in 1000 cc. of r cent alcohol, flavored with a few cubic cen ers of rye extract. The evening before the 10-cc portion of this solution, containing 0 1 of the drug, was transferred by pipette to a vial, which was tightly corked and placed e ward for use early the next morning Stand nstructions to the nursing personnel were as ys

Withhold all food and *water* from midnight until our after giving test solution to patient.
At 6 a m., obtain a urine specimen and discard.
Immediately empty entire contents of vial into a ne glass add water carefully to the *1-oz* mark and atient drink it all, *without additional water*
One hour later, patient may have water and break

At 8 a m., obtain a urine specimen and place enmount in Bottle 1
At 10 a. m., obtain a second urine specimen and ntire amount in Bottle 2.

hird specimen was obtained at noon from patients who were markedly debilitated, toxic hydrated, or were suffering with renal or ardial insufficiency This two-hour rou vas modified after the first 125 cases and two specimens of urine were obtained, at n and noon Neither method appeared to s any significant advantage over the other in ıcy of results

: urine specimens were examined individ without delay by pouring small portions of nto two beakers placed side by side on white and adding 10 per cent sodium hydroxide ın by dropper to one beaker until maximum was obtained the other beaker serving as a l The intensity of color was graded em lly on a basis of + to ++++ It was discovered that a minimal pink coloratioo appeared with such frequency that it could garded as completely unreliable in the in tation of the test.

this study progressed various factors re ble for false results became evident. Since lphthalein precipitates from alcohol water ns containing less than 20 per cent alcohol mportant to perform the test on a fasting ch Stasis of gastric contents overnight vitiate the results The amount of water used to dilute the original 10-cc. test dose must also be restricted, and all further liquid or food forbidden for one hour If the urine specimens are allowed to stand in a warm room for several hours, false positives are sometimes obtained probably owing to the liberation of free phenolphthalein from the conjugated form always present in the urine of individuals who have taken the drug The test should not be repeated until the urine has been shown to be free of the drug nor should it be performed if phenolphthalein has been taken medicinally the preceding day An other source of error is the contamination of urine with stool, especially in women and in patients with profuse diarrhea If the pheoolsulfonephthalein test for renal function has been done, it is advisable to wait forty-eight hours before beginning this test since delayed excretion of the first dye in some cases may give false positive results.

There were no significant reactions or ill effects, several patients vomited shortly after the ingestion of the phenolphthalein, and a few others experienced loose bowel movements for the succeeding twenty-four hours

RESULTS

A total of 203 patients were submitted to this test Of these, 52 had intrinsic lesions of the gastrointestinal tract The remaining 151 had a variety of conditions other than those of the gastrointestinal tract or no demonstrable pathologic lesion and therefore served as a control group In those cases where the results were equivocal or failed to correspond with the clinical findings, the test was usually repeated after a suitable interval. The total number of tests was 232.

A review of Table 1 which covers cases with organic gastrointestinal disease, demoostrates that

TABLE 1 *Phenolphthalein Test in Cases with Intrinsic Lesions of the Gastrointestinal Tract.*

DIAGNOSIS	NO. OF CASES	POSITIVE TESTS	NEGATIVE TESTS
Ulcer (of gum or pharynx)	4	4	
Carcinoma of esophagus	2		
Gastric ulcer	5	3	
Duodenal ulcer	17	11	6
Hematemesis	2		
Diaphragmatic hernia	1	1	
Carcinoma of stomach	4	3	1
Gastritis	4	4	
Regional ileitis	1	1	
Chronic ulcerative colitis or amebic dysentery	4	1	3
Carcinoma of colon or rectum	5	5	
Abdominal actinomycosis	1	1	
Hypertrophic pyloric constriction	1		1
Partial intestinal obstruction	1		1
Totals	52	36	16

only 36 positive tests were obtained in this group of 52 patients. Carcinoma of the stomach and bowel gave the highest proportion of positive

results, whereas negative tests were found in 2 cases of esophageal carcinoma, possibly owing to the brief period of contact between the drug and the diseased area Ulcers of the mouth and pharynx gave uniformly positive tests Of 22 patients with gastric or duodenal ulcer, approximately one third yielded negative results More detailed analysis of these failures revealed that gastric stasis or pyloric obstruction with fluid retention and possible precipitation of the drug might account for several, and 1 patient had an ulcer high in the cardia No explanation was apparent in the remainder There were 3 failures in 4 cases of chronic ulcerative colitis or amebic dysentery characterized by frequent liquid stools daily Here again, insufficient contact due to the hypermotility of the bowel may have been a factor

As noted in Table 2, the results in the 151 patients in the control group yielded 127 negative

TABLE 2 *Phenolphthalein Test in Cases without Intrinsic Lesions of the Gastrointestinal Tract*

DIAGNOSIS	NO OF CASES	POSITIVE TESTS	NEGATIVE TESTS
Syncope hysteria or anorexia nervosa	8		8
Diabetes	4		4
Gall bladder disease	8	1	7
Orthopedic disease	17		17
Gynecological disease	19	1	18
Renal disease	4	1	3
Blood dyscrasias	2		2
Appendectomy (postoperative)	9	1	8
Hernia	13	2	11
Anal disease	4		4
Mild pulmonary disease, asthma	10	3	7
Cardiac disease	20	5	15
Acute overwhelming toxemia or infection	5	5	
Metastatic malignancy	3	2	1
Brain lesions	6	1	5
Miscellaneous	19	2	17
Totals	151	24	127

and 24 positive tests Patients with hysteria, unexplained syncope or anorexia nervosa gave consistently negative results This was also true for patients with diabetes and with diseases of the bones and extremities Positive tests were found especially in serious and advanced heart disease with pulmonary edema, paroxysmal nocturnal dyspnea or coronary occlusion, in cases of acute overwhelming toxemia or infection, and in metastatic malignancy These patients represented half the positive tests in the control group One must assume either that breaks in the mucous membrane of the alimentary canal frequently exist under such conditions, or that the vitality of the cells is so impaired that the enteric membrane no longer acts as an efficient barrier to the drug Several asthmatic patients also excreted significant amounts of free phenolphthalein in the urine

All control subjects showing positive tests were questioned as to remote or recent gastrointestinal complaints, the mouth and pharynx were examined for unsuspected lesions, the blood w checked for anemia and stools were tested f occult blood In a number of these cases t gastric contents were analyzed and the gastr intestinal tracts x-rayed The results were ur formly negative, and these two procedures we discontinued as a routine unless the symptoma ology warranted special investigation It is po sible, therefore, that several of these controls ha occult disease of the alimentary canal which we unrecognized Gastroscopic examinations in th group would have been of considerable intere in view of the frequency with which the gastro copist discovers minute breaks in the muco membrane of an otherwise normal-appearin stomach Individuals in the older decades yield the greatest number of false positives, but this fa was not considered significant when corrected f age distribution of control cases On the oth hand, there were occasions when the phenolphth ein test might have given a brilliant clue to t situation, as in the case of a fifty-five-year-old ma with a mass in the right side of the abdomen ar a clinical history and x-ray diagnosis of carcinom of the ascending colon The test was negativ and at operation a hypernephroma of the rig kidney was discovered It is our impression th the test may find its greatest field of usefulness ambulatory patients, in whom the chance of o taining false positives because of severe toxem or far-advanced systemic disease would be large eliminated

Certain modifications in the procedure of t test seem worthy of adoption In view of the rap absorption from oral lesions which might o scure a more serious condition lower down, t patient should drink the test fluid through a stra rinsing the mouth immediately and thorough with water without swallowing further Exc sive salivation should be noted and prevent from interfering with the test In cases of su pected gastric disease, the test is best done aft gastric lavage or gastric analysis, in order to ob ate retention and consequent excessive dilutio of the test liquid At times catheterization to o tain the urine specimens may be indicated, as prostatic cases in men or those with watery diarrh in women

SUMMARY AND CONCLUSIONS

The diagnostic phenolphthalein test was pe formed on 52 patients with intrinsic lesions of t gastrointestinal tract and 151 controls with variety of other conditions or with no demonstrab organic disease

The technic is described in detail, and the sourc of error are emphasized

one fourth of the cases with proved disease he alimentary canal the test was negative. one sixth of the control cases the test was tive.

our experience, the phenolphthalein test had wide a range of error to be considered reliable ne diagnosis of gastrointestinal disease

Changes in procedure are suggested in order to reduce the incidence of incorrect tests.

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CLINICAL EXPERIENCE WITH 95 TO 98 PER CENT OXYGEN IN THE TREATMENT OF ABDOMINAL DISTENTION AND OTHER CONDITIONS*

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PROVIDENCE RHODE ISLAND

HIS communication is a brief review of clin ical experience in the use of 95 to 98 per cent en in several conditions, the most important hich is gaseous distention of the small intes-

This method of treatment was first de ed by Fine and his associates,[1] it depends on act that the inhalation of almost pure oxygen duces the nitrogen content of the alveolar air nitrogen passes from the blood plasma into alveoli, and that the reduction of nitrogen on in the plasma which results causes in turn ssage of nitrogen into the blood from any in which nitrogen is trapped, as in small l distention or in subcutaneous emphysema d previously been demonstrated that the gas istention of the intestine consists principally ther nitrogen or hydrogen, in most cases the er Furthermore, Fine and his colleagues ed that air injected subcutaneously soon loses oxygen content, nitrogen remaining They onstrated in experimental animals that ab- ion of this nitrogen can be accomplished by nhalation of 95 per cent oxygen Clinically applied the method to patients with gaseous minal distention, and also to those with dis- on of the cerebral ventricles with air resulting the making of encephalograms, they have ted considerable success in the control of conditions

the application of Fine's method of treat we have used the closed-box technic re y described by one of us (A. M. B.[2]) This modification of the open-box method which been in use for several years at the Rhode d Hospital[4] A cover is placed over the and the exhaled carbon dioxide is partly absorbed by soda lime and is partly washed out by the constant outflow from the apparatus. In practice it has been found wise to maintain a flow of oxygen into the apparatus of at least 8 liters per minute in order to keep the carbon dioxide at a level of 3 per cent or lower (although as a rule the oxygen content can be maintained at over 95 per cent with a much slower inflow) It is believed that further study will show still more effective methods of controlling carbon dioxide Although 3 per cent carbon dioxide in the inspired air is undesirable and markedly increases respiration, it is probable that in the cases of abdominal distention where the need of relief is extremely urgent this factor is of minor importance Following the advice of Fine, we have not kept our patients in an atmosphere of 95 per cent oxygen continuously for more than twelve hours At the end of this period the oxygen content of the box is reduced to about 50 per cent merely by removing the cover It is replaced after an hour in those cases in which further treatment is deemed necessary, and thus another twelve hour period in 95 per cent oxygen is initiated Actually, in 1 of our cases the method was applied almost continuously for forty-two hours to a man whose condition was so extreme that every attempt to remove him from the concentrated oxygen resulted in such evidence of impending death that he was at once replaced and the treatment continued Postmortem examination showed collapsed intestines and no positive evidence that the long exposure to 95 per cent oxygen had done any damage We are aware, however, that there is ample evidence[5] that such exposure may be harmful When the method is used for the relief of abdominal distention it should, in our judgment be considered an emergency measure to be applied only when simpler means such as gastric intuba

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tion, enemas and peristaltic stimulants have been found to be of no avail

A number of factors can cause failure of the procedure, among which may be mentioned extreme restlessness on the part of the patient This may be due to pain, apprehension or an excess of temperature, humidity or carbon dioxide in the apparatus because of faulty technic, such as failure to keep the oxygen flow at the proper rate, to keep the ice compartment filled or to use fresh soda lime Attention to these matters, including the testing of oxygen-flow meters from time to time, we have found usually ensures moderately comfortable conditions for the patients Another common cause of failure of the method is neglect to maintain an oxygen concentration of 95 per cent or higher This may be due to excessive leakage from the apparatus, often caused by an improperly applied neck band or by the movements of a restless patient It is of course necessary to test the concentration of oxygen frequently during the period of treatment When the apparatus is properly applied and the patient is not constantly pulling at the neck band, a level of 98 per cent of oxygen is almost invariably found after the first hour in the apparatus

We have used this method in 40 cases of abdominal distention and in 3 cases of severe subcutaneous emphysema In addition, it has been employed routinely after encephalography A general report of the results of this work will be given, with a more detailed account of some of the cases in which the method seemed to be of particularly striking value

Of the 40 cases of abdominal distention, 25 showed a definite decrease in the distention, in 5 cases the results were questionable, and in 10 cases the treatment seemed to have no effect We report 5 cases in which the results were very satisfactory We realize that abdominal measurements are not a satisfactory index of the amount of distention, for many abdomens soften markedly without showing any appreciable change in circumference However, as we have been unable to devise any other simple method, we have adhered to circumferential measurements as an indication of increasing and decreasing distention

CASE 1 *Perforated appendicitis with spreading peritonitis*

A 3½-year-old boy was admitted because of vomiting for 36 hours and generalized abdominal pain for 24 hours Examination revealed a temperature of 103 6°F, marked spasm in the right upper and lower quadrants of the abdomen, slight spasm in the left lower quadrant and tenderness most marked in the right lower quadrant. Urine examination was negative, and the white-cell count was 22 000 with 90 per cent polymorphonuclears

Laparotomy was done at once, and a perforated appendix with free pus in the peritoneal cavity was found. drained Twenty four hours later the abdomen was markedly distended and tympanitic. Insertion of a rectal tube gave no flatus or fecal results The patient was very restless and pain was not controlled by morphine. He was put in a closed box at 9 p m, and the course was as follows

DATE	TIME	ABDOMINAL GIRTH	REMARKS
		cm	
1/28	9 00 p m		Put in box
1/29	12 00 m	61 (over dressing)	Asleep for first time
	4 00 a.m	57	Expelled flatus for first time
	8 00 a m	55	98% O_2
	9 30 a m		Taken from box
	6 00 p m		Returned to box
	8 00 p m	55	
1/30	6 00 a.m		Top of box removed
	7 00 a.m		Top of box replaced
	9 30 a m		Box removed (abdomen soft)

The patient had two spontaneous bowel movements on the morning the box was removed, and the rest of his course in the hospital was uneventful, going on to complete recovery

This is an example of the use of the box to control distention when enemas are contraindicated immediately following abdominal operations

CASE 2 *Lobar pneumonia with marked tympanites*

A 40-year-old Negro, a known diabetic patient, was admitted with pneumonic consolidation in the left lower lobe of probably 6 days' duration There was marked abdominal distention on admission, which was partly relieved by enemas and peristaltic stimulants The day after admission the abdomen again became distended. Enemas, stupes, peristaltic stimulants and a rectal tube gave poor return of either flatus or feces The patient was placed in a closed box with the following results

DATE	TIME	ABDOMINAL GIRTH	REMARKS
		cm	
1/6	12 00 m	87	Put in box
	3 30 a m	87	
	6 30 a m	83	
	2:30 p m	79	Taken out of box,

In the afternoon of removal an enema gave good fecal and flatus results, and the patient went on to a complete recovery without further abdominal distention

CASE 3 *Lobar pneumonia with tympanites*

A 51-year-old white man was admitted with pneumonic consolidation in the left lower lobe of 2 days' duration. There was marked abdominal distention on admission, which was at first fairly well controlled by enemas, poultices, peristaltic stimulants and a rectal tube. However, on the 3rd day, because of increasing distention, the patient was placed in a closed box, with the results as summarized

DATE	TIME	ABDOMINAL GIRTH	REMARKS
		cm	
2/3	2 00 p m	114	Put in box
	6 45 p m	111	98% O_2
	9 45 p m	111	
2/4	1 00 a m		Taken from box
	2 00 a m		Returned to box
	3:30 a m	114	
	9 00 a m		Taken from box
	10 00 a.m		Returned to box
	1 00 p m	114	
	5 15 p m	111	
	10 00 p m		Taken from box
	11 00 p m		Returned to box
2/5	4 30 a m	112	Abdomen much softer
	8 00 a m		Box removed
	9 30 a m	108	

The box was not reapplied During the 42 hours that the box was used no enemas were given An enema on the morning the box was permanently removed gave

This is a case of increasing abdominal distention in spite of usual forms of therapy, which showed good reduction by the use of 98 per cent oxygen alone.

Case 4 *Appendicitis with rupture and general peritonitis*

A 15-year-old boy was admitted with a history of pain in the right lower quadrant of the abdomen 7 days before with nausea and vomiting. This had persisted for 3 days and disappeared only to return the day before admission. Examination revealed an acutely ill boy with a temperature of 101.2 F., with generalized spasm of the entire abdomen and tenderness most marked in the right lower quadrant. Immediate laparotomy was done and an acute gangrenous perforated appendix was found with free pus in the peritoneal cavity. The appendix was removed and the peritoneal cavity drained. Twenty four hours after operation the abdomen was markedly distended and hard. The use of a rectal tube gave only a small return of flatus and seemed to have no effect on the distention. The patient was placed in a closed box, with the following results

DATE	TIME	CONDITION OF ABDOMEN	REMARKS
1/22	10:00 p.m.		Placed in box
1/23	10:00 a.m.	Much softer	Taken from box
	4:45 p.m.	Much harder throughout the day	Returned to box
	11:00 p.m.	Much softer	
1/24	4:45 a.m.		Taken from box
	5:45 a.m.	Soft	Returned to box
	10 00 a.m.		Taken from box
	11.00 a.m.		Returned to box
	4 00 p.m.	Fairly soft	Taken from box
	5:00 p.m.		Returned to box
1/25	5 00 a.m.	Soft	Taken from box
	6-00 a.m.		Returned to box
	3 00 p.m.	Very soft	Box removed

The patient went on to recovery without further distention.

In this case the box was used for 65 hours, intermittently, and easily controlled the distention during that period, when enemas were contraindicated

Case 5. *Acute gangrenous appendicitis with peritonitis*

A 3½ year-old girl was admitted with a 24-hour history of pain around the umbilicus and the right lower quadrant, associated with vomiting and diarrhea. At laparotomy a gangrenous appendix was found and removed. Cultures of the peritoneal cavity showed gram-positive rods and a few gram positive diplococci. Twenty four hours after operation the patient was vomiting repeatedly and her abdomen was markedly distended. A Levin tube was inserted, but the patient would not leave it in. She was placed in a closed box with the following results

DATE	TIME	ABDOMINAL GIRTH cm	REMARKS
7/2	9:00 p.m.	56	Placed in box
7/3	1:00 a.m.	56	
	5:00 a.m.	54	
	9 00 a.m.	56	
	10 00 a.m.		Top of box removed
	11 15 a.m.	56	Top of box replaced (abdomen is quite soft) 98% O_2, 0.8% CO_2
	1:30 p.m.		
	9:00 p.m.	54	Box removed (abdomen much softer)
	10 00 p.m.		

From this time on the patient was not troubled with distention except for one episode which was relieved by enemas.

We have had 3 cases of subcutaneous emphysema in which the 98 per cent oxygen was used to decrease the amount of gas in the tissues. In all these cases the results were very satisfactory.

Case 6. *Post pneumonic empyema with bronchopleural fistula.*

A 27 year-old woman was admitted 2 weeks after recovery from lobar pneumonia. On entry there was a very large amount of thick green pus in the right pleural cavity. Closed drainage through a catheter was established. The catheter became plugged and subcutaneous emphysema developed starting just above the clavicles and spreading up over the face and down the chest wall (Fig. 1). A

Figure 1 *Case 6. Note the marked subcutaneous emphysema of the chest, neck and face*

thoracotomy with partial rib resection was done and open drainage established. Twenty four hours later there was no appreciable decrease and no increase in the emphysema. The patient's eyes were closed by swelling and she was very apprehensive and uncomfortable. She was placed in a closed box for 12 hours was taken out for 5 hours and put back for another 5 hours. After this treatment the patient could easily open her eyes and although not all the gas had been absorbed the tissues were much softer and the patient more comfortable (Fig. 2). The patient finally died, and autopsy revealed miliary abscesses in the liver, spleen and kidneys and a bacterial endocarditis.

Case 7 *Pulmonary abscess.*

This patient was admitted because of pulmonary abscess. A thoracoplasty for a first stage drainage was performed. Two days after the operation, emphysema of the chest, face, palate and uvula developed. The left eye was completely closed by the swelling. The packs were removed from the wound and hollow rubber tubes inserted to give a free exchange of air with each respiration. The patient was placed in a closed box for 12 hours, at the end of which time the puffiness of the face was much less and he was able to open both eyes. He was put back in the box for another period of 11 hours, after which there was little crepitation to be felt, and measurements of the head

and the external tab exists simply as a flabby or fibrotic sac of skin covering its base There are no symptoms, and examination with the hook produces no discomfort Ten or fifteen years is usually required for the production of this last, quiescent stage.

The indications for excision of the tabs and their crypts during the second and third stages are quite obvious The acute attacks in themselves are uncomfortable and semi-incapacitating, while fissures, ulcers, enlarged papillae, perianal

FIGURE 1

This photograph shows three nearly confluent cryptic tabs

abscesses, fistulas and even hemorrhoids are common as ultimate complications requiring surgical intervention Furthermore, certain types of pruritus ani[6 9] can be cured or alleviated by their removal, and even anal cancer has been found to have its origin in the immediate vicinity of such sources of chronic irritation[10 11] Hirschman[7] maintains that such crypts constitute definite foci of infection

In the fourth stage, when the condition has finally become quiescent, when the crypt is so large that adequate drainage is established and when nothing but a flabby or fibrotic external pouch of skin remains, producing no irritation, it seems best to leave well enough alone, unless complications indicate otherwise

The operative removal of such a cryptic tab should be complete It is not enough to remove the external tab, as the upper part of the crypt will still remain and from this another tab, an abscess or a fistula may develop Nor is it enough to slit the anterior wall of the crypt without removing the tab, as this procedure is often followed by recurring painful edema of the latter In fact, unless the aftercare is exacting the crypt is often re-formed by a sealing together of the slit edges

Our operative technic is as follows With the patient in the Sims position* and one of the operator's index fingers in the anus to prevent the needle from piercing the rectal wall, between 4 and 5 cc of an oil anesthetic solution† is introduced into and behind the sphincter adjacent to the tab Of this, 1 cc is placed in the sphincter both to the right and left of the tab, 1 cc in the sphincter directly under the crypt and 1 or 2 cc fanwise in the perianal area behind the crypt and external to the sphincter The oil should not be pooled in any one place, and after withdrawal of the needle the whole area should be massaged thoroughly in order to disseminate any possible pooling A suitable anoscope is introduced so that exposure of the upper opening of the crypt, the enlarged papilla and some of the external tab is gained The area is painted with 2 per cent aqueous merurochrome, and 1 or 2 cc of novocain or Eucupin in saline solution[13] is introduced into

FIGURE 2

A crypt hook has been inserted into the middle cryptic tab (right inferior) seen in Figure 1

the tab and the submucosa over and surrounding the crypt A long crypt hook is inserted into the crypt, and the latter is pulled out into the lumen of the anoscope (Fig 2), allowing it and its enlarged papilla to be excised with a pair of scissors (Fig 3) This usually produces an incision running well down into the skin of the tab With the anoscope removed, the tab itself

*If the cryptic tab is in the posterior half of the anus the right Sims position allows the operator to use his right hand while if it is in the anterior half of the anus the left Sims position allows the use of the right hand

†There are many oil anesthetics in use at the present time but the one which has given us the best results with the least complications is Eucupin in oil prepared according to the formula of Manheim and Marks.[13] It contains no phenol

is dissected off its base with scissors and forceps. The latter dissection should join or be continuous with the previous incision (Fig 4) A definite margin usually exists separating the tab from normal skin (Fig 1), and the dissection should be made exactly at this margin No small projecting fragments of skin or mucous membrane should be left, as they become edematous and painful. If a pecten band[3] exists beneath the crypt it is incised before the anoscope is removed Care should be exercised not to remove too much tissue at the pectenate line, as healing in this region is very slow Bleeding within the anus is usually of little moment, since the crypt is between the columns of Morgagni and away from the main hemorrhoidal blood supply If there is an unusual amount of bleeding, however, pressure with a cotton swab usually controls it, and when this happens we introduce into the lower rectum, just prior to the removal of the anoscope, a packing made up of several cotton tampons. Occasionally crushing or tying is necessary Any ooze from the bed of the external tab is controlled by applying a gauze dressing between the buttocks, strapping it on with adhesive and having the patient sit on it for fifteen or twenty minutes This dressing must be left in place until the next morning One tablespoonful each of mineral oil and of agar in oil is given the same night, and a bowel movement encouraged the next day Rest in bed is unnecessary except for those patients who are extremely

FIGURE 3

The crypt is being excised with a pair of scissors

neurotic. The patient is seen daily for four or five visits, and then every other day for a week on each occasion a well lubricated finger is run down through the incision from within outward so as to maintain drainage and keep the wound open until healing from the bottom has taken place This process is usually well on its way by the end of a week Hospitalization for twenty four hours as a precautionary measure is preferable when possible, but certainly the procedure can be classed as ambulatory surgery, for in all our Boston Dispensary cases the patients have been operated on in the clinic and sent home immediately afterward.

The end result not only removes an uncomfortable structure but also eliminates a focus of infection and results in the disappearance of many reflex symptoms

SUMMARY

Certain perianal protrusions are composed of an external tab of skin covering the base of a crypt of Morgagni

FIGURE 4

The tab has been excised at its junction with the normal skin

We have given the name of cryptic tabs to these structures.

There seem to be four progressive stages in the formation of cryptic tabs an invasive stage, when infection involves preformed epithelially lined ducts beneath the skin of the anus an acute stage, during which drainage from the ducts is inadequate and a crypt is formed with its base in a small edematous "sentinel pile", a subacute stage, in which the base of the crypt is well out under the perianal skin and drainage is only periodically inadequate and a chronic stage, when the crypt is so large and patulous that drainage is always adequate

Excision during the second and third stages is frequently indicated

An operative procedure is outlined

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REPORT ON MEDICAL PROGRESS

PEDIATRICS*

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SULFAPYRIDINE

SUBSEQUENT to the report of Whitby[1] that sulfapyridine would protect mice against various types of pneumococci, the literature has contained numerous papers concerning the effectiveness of this agent in the treatment of pneumonia occurring among children and adults Evans and Gaisford[2] reported a mortality rate of 8 per cent in patients treated with sulfapyridine, in contrast to a mortality rate of 27 per cent in a comparable number (100) of untreated cases, Flippin and his associates[3] were also impressed by its effectiveness in adults, as were Barnett et al[4] with its use in children The recent publication of Hodes et al[5] concerning its use in 71 infants and children suffering from pneumonia with no fatalities would indicate that a potent agent against this infection has been produced In the latter series, 33 patients were suffering from primary pneumonia and 38 from pneumonia associated with measles, and it is interesting to note that in all cases the temperature became normal in forty-eight to seventy-two hours Type 14 pneumococcus was the commonest organism isolated from the nasopharynx of the younger group with primary pneumonia, whereas Type 1 was the commonest offender in the older group suffering with the same disease In the patients with pneumonia associated with measles, Type 14 occurred in 11 patients, Type 19 in 6 patients and many other types of pneumococci in the remaining cases Carey and Cooley[6] have recently studied 630 infants and children suffering from pneumonia at the Children's Hospital (Michigan) with regard to the etiology and effect of specific treatment with antipneumococcus rabbit serum and sulfapyridine One hundred and six patients received serum, 248 sulfapyridine and 276 no specific form of therapy The duration of the illness in the untreated cases was longer than in either treated series, while the average duration of the illness in the serum-treated and sulfapyridine-treated groups was approximately the same Complications in the form of meningitis, suppurative otitis media and mastoiditis, however, were less commonly encountered in the treated than in the untreated group These authors conclude that specific serum was equally as effective for the types of pneumococci available with the exception of 2 cases of Type 18, but that sulfapyridine was effective in treating pneumonia due to any of the thirty-two types of pneumococci encountered in the study Sulfapyridine was equally as effective as sulfanilamide in the treatment of 5 per cent of the cases of pneumonia due to the hemolytic streptococcus

The dosage employed has usually been 1½ gr per pound of body weight as the initial dose, followed by 1 gr per pound divided into six doses, administered every four hours as the daily maintenance dose In some cases it may prove advisable to divide the initial medication into two parts and give half the total amount each hour for two doses, as this may prevent the development of nausea In acutely ill patients it is advisable to give the maintenance dose four hours after the initial dose This will produce a blood level between 8 and 12 mg per 100 cc, which in most cases has proved satisfactory As sulfapyridine is insoluble it is advisable to administer it in some menstruum, such as cereal or applesauce.

The duration of this form of therapy has received a great deal of discussion, as some authorities are of the opinion that it may be safely

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continued as soon as the temperature becomes mal, while others think that it should be con ued for several days after all signs and symp- is of the infection have disappeared It is true t the temperature usually returns to normal hin forty-eight to seventy-two hours following introduction of sulfapyridine, however, it is ally true that the signs of the pneumonic ction are persistent at that time as dem trated by physical and roentgenological exam ions Until further evidence of the safety of y discontinuation of the agent is available, it ild appear that a gradual reduction in dosage a period of several days is the more rational edure. Carey and Cooley[6] have followed two is of treatment, the first of which was to esti e a dose based on 1 gr per pound of body ght and to give this amount as the initial and dose. However, in the majority of cases the perature did not return to normal until fur medication was administered The second le of treatment was to give an initial dose of gr per pound of body weight and to follow with a daily dose based on 1 gr per pound orty-eight hours This form of treatment was ssful only with patients who had been ill ess than five days Where patients had been r five days or longer it was found advisable ntinue therapy for several days after the tem ure had become normal The very fact that causative pneumococci may and usually do st in the nasopharyngeal secretions after there nical evidence of improvement adds further ort to a more prolonged administration of pyridine.

mplications or toxic reactions arising from se of sulfapyridine are not unlike those seen e use of sulfanilamide.[4, 6, 7] These are nausea, ting, anorexia, agranulocytosis, anemia, hem and the development of a morbilliform rash e complications usually disappear following ithdrawal of the drug, and they do not occur sufficient frequency or severity to contra ate its use in the treatment of pneumococcal ions

e results which have been obtained up to the nt time indicate that sulfapyridine is the of choice in the treatment of pneumonia neumococcal infections occurring among in and children The dangers of sudden severe alarming reactions which have been noted ving the use of specific horse or rabbit serum bviated, serum sickness as well as serum ivity do not occur, nor is valuable time last ing to obtain from these small patients suf t sputum to permit typing

PATENT DUCTUS ARTERIOSUS

Advances in thoracic surgery have included not only procedures involving the lungs but also those directed toward the heart These measures have usually been instituted for the correction of traumatic or inflammatory processes, and little attention has been given to the possible correction of congenital cardiac anomalies which per se jeopardize life. Although many of these anomalies are not amenable to surgery, some may respond, as shown by the recent report of Gross and Hubbard[8] on the successful ligation of a patent ductus arteriosus

The justification for surgical correction of this anomaly is based on the fact that most of these patients succumb early in life to subacute bacterial endocarditus developiog on vegetations at or near the pulmonary orifice of the ductus, or to circu latory failure.[9] Although there is every reason to believe that ligation of the ductus may avoid cir culatory failure (which it has done in the oper ated cases) there is no evidence that this procedure precludes the implantation of vegetations The latter question can be answered only after a larger group of cases have been studied and after an ade quate period of time has elapsed following oper ation

It is true that many individuals suffering from this condition may live their full span of life without complications, and therefore there must be certain specific indications for this operative procedure Hubbard, Emerson and Green[10] have recently stressed the importance of this aspect of the subject and are of the opinion that at the present time it is advisable to limit surgery to those cases presenting evidence of a shunt large enough to throw a strain on the heart. Such evi dence consists of retardatioo of the normal rate of growth, congestive failure, peripheral signs of aortic regurgitation and congestion of the pul mooary vessels as determined by roentgenological examinations The fact that Gross[11] has successfully operated on 4 patients aged six, seven, eleven and seventeen, with congestive failure and has obtained clinical relief in each case indicates the value of the procedure.

EQUINE ENCEPHALOMYELITIS

In view of the fact that the early cases of equine encephalomyelitis occurring in human subjects first appeared in this part of the country during late August, 1938, it appears advisable to review our present knowledge of this disease, and to call attention to the possibility of further cases appearing this year

Although it is probable that equine encephalo-

myelitis has existed in the United States for a long time, only during the past few years have data concerning this infection been accumulated This work began with the discovery by Meyer, Haring and Howitt[12] of the Western strain of virus, which during the summer of 1930 was responsible for an epidemic of the disease among horses in the San Joaquin Valley in California In 1933 a disease appeared among horses in Virginia, Maryland and New Jersey which presented clinical manifestations quite similar to those seen in the equine encephalitis in California However, the virus producing the infection among the former group was shown to differ from that producing the infection in the latter, not only in its immunological reactions but also in the mortality rate of the disease Ten Broeck and his associates[13 14] designated this virus as the Eastern strain in contrast to the Western strain It was this strain of the virus as shown by Fothergill et al[15] and Webster and Wright[16] that produced the infection in both adults and children in eastern Massachusetts and Rhode Island during the late summer of 1938

The mode of onset and clinical manifestations, although usually abrupt, varies according to the age of the infected individual[17 18] When the disease develops among infants and children the onset is usually abrupt, with dizziness, severe headache, marked prostration, convulsions and rapidly developing coma Aphasia, diplopia and various degrees of paralysis are not uncommon The temperature is practically always quite elevated, usually ranging from 103 to 104°F, but in fatal cases reaching even higher points Death frequently occurs in twenty-four to forty-eight hours after the onset of symptoms In older patients the onset may not be quite so abrupt, and several days or even a week may elapse before the development of signs and symptoms indicative of cerebral involvement Examination of the blood is not pathognomonic of the infection, since it simply reflects the presence of an acute infection, as evidenced by a leukocytosis with a predominance of polymorphonuclear leukocytes Examination of the cerebrospinal fluid reveals cytologic, chemical and bacteriologic changes which are consistent with any form of acute encephalitis, with the possible exception that the total cell count is usually higher than that encountered in other nonpurulent acute infections of the central nervous system The total number of cells present usually varies from 200 to 3000 per cubic millimeter, with polymorphonuclear leukocytes predominant It has been observed that, when the patient survives the infection for several days or recovers, the polymorphonuclear leukocytes are replaced by lymphocytes

In view of the fact that 25 of 38 cases reported to the Massachusetts Department of Public Health had a fatal termination, one hardly need comment on the prognosis Furthermore, many patients who recover suffer from some disabling sequela

The appearance of a disease with such a high mortality and morbidity rate naturally directed immediate attention to the possible mode of infection Although many of the cases of equine encephalomyelitis in human beings have occurred in the same area in which the virus was infecting horses, the means of human infection remains obscure Simmons[19] has recently discussed this aspect of the epidemiology, and has pointed out that eight different species of Aedes mosquitoes have been shown to be possible vectors, yet none have been found to be the cause of the recent epidemic appearance of the infection The domestic pigeon,[20] the gopher[21] and the tick[22] have also been shown as possible sources of infection

A disease accompanied by such high mortality and morbidity rates demands exhaustive study not only as to its clinical manifestations and possible means of treatment but also to its epidemiology It therefore becomes increasingly important to prove or disprove the presence of the virus in every suspected case To date it has not been recovered from the blood or spinal fluid of any patient This may be due to the fact that the causative agent disappears from these fluids with the onset of encephalitic manifestations — this is true in the case of experimental animals Therefore any suspected case should be reported immediately to the Massachusetts Department of Public Health in order to facilitate the furtherance of appropriate studies Success or failure in recovering the virus from the central nervous system in fatal cases depends almost entirely on how much time has elapsed between death and the postmortem examination the greater the interval in hours, the less are the chances for recovery of the virus

CELIAC DISEASE SYNDROME

Until recently all patients presenting certain clinical manifestations were considered as suffering from celiac disease However, attention has been called to the fact that these symptoms may develop as a result of various disorders which interfere with the proper metabolism of food Blackfan and May[23] have recently reported the clinical manifestations of 35 infants in whom an advanced lesion of the pancreas was found at necropsy The lesion in the pancreas consisted in complete destruction of the normal acinar tissue, with replacement by inspissated secretion

and subsequent fibrosis, so that all normal functional exocrine tissue was destroyed. These patients failed to do well, usually from birth, and developed symptoms of gastrointestinal disturbance such as diarrhea or vomiting as debilitation progressed bronchopneumonia developed, and this was the usual cause of death. Most of the infants died before reaching six months of age without developing any more characteristic features. Seven patients, however, lived much longer and as the disease progressed developed the features of the celiac disease syndrome, namely wasting, abdominal distention, fatty diarrhea, flat glucose tolerance curves and clumping of barium in the small intestine as demonstrated by gastrointestinal roentgenograms. Even these patients, however, died before they were two years old. Blackfan and May point out that the vitamin A deficiency which developed in 7 patients was demonstrated to be secondary to impaired gastrointestinal absorption of the vitamin.

This report is of particular interest because it demonstrates another pathological basis, namely a pancreatic lesion, from which the celiac disease syndrome may develop in contrast to those patients presenting this syndrome in whom no underlying disease process can be found either in life or at necropsy. This pathologic entity must be kept in mind as the basis of the symptoms of infants presenting gastrointestinal and respiratory disorders who fail to improve with ordinary therapy or on the celiac diet. Furthermore, since the prognosis in true celiac disease is so much better than it is in patients suffering from pancreatic disease and presenting the celiac syndrome, a close study before the final diagnosis is established is necessary.

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CASE RECORDS OF THE MASSACHUSETTS GENERAL HOSPITAL

ANTEMORTEM AND POSTMORTEM RECORDS AS USED IN WEEKLY CLINICOPATHOLOGICAL EXERCISES

FOUNDED BY RICHARD C. CABOT, M.D

TRACY B MALLORY, M.D., *Editor*

CASE 25341

PRESENTATION OF CASE

A fifty-two-year-old white married woman was admitted complaining of pain and soreness in the lower abdomen

Seven years before entry the patient began to have excessive vaginal bleeding associated with huge clots Dilatation and curettage were performed at another hospital and radium treatment was given There was no further bleeding until one year later when her menstrual periods began again, they were very irregular, occurring every two, four or six months She continued to have menorrhagia and metrorrhagia, and one year before entry she was given deep x-ray therapy (1200 r) Following this she developed a leukorrhea and shortly before admission noticed a great deal of pain and soreness in the lower abdomen

Physical examination showed a well-developed and nourished woman in no distress Examination of the head and chest was negative The blood pressure was 165 systolic, 120 diastolic Abdominal examination was negative Pelvic examination under ether showed a wide-open cervix, with a tumor which extended to and completely filled the external os The tumor was fairly soft, smooth and movable, the end being necrotic

The temperature was 98°F., the pulse 72, and the respirations 20

The urine showed a slight trace of albumin, and the sediment contained 3 red cells and 50 white cells per high-power field

On the second hospital day an operation was performed

DIFFERENTIAL DIAGNOSIS

DR GEORGE A LELAND This patient was forty-five years old when she began to have excessive vaginal bleeding — the age when one might suspect the beginning of the menopause We might expect such bleeding to come from fibroids, carcinoma of the cervix, hyperovarianism, fibrosis of the uterus, carcinoma of the fundus or uterine polyps It is the type of bleeding which to a laywoman's mind is associated with the menopause — excessive bleeding This is an idea that it behooves the medical profession to correct The menopause is not normally accompanied by excessive bleeding Excessive bleeding means some pathologic condition It may not be serious and may not be malignant disease, but there is some definite lesion

In this particular case the bleeding was so severe that the patient went to a hospital where dilatation and curettage were performed and radium given This fact helps but little in the diagnosis She may have been given radium treatment for fibroids or any other benign condition or it may have been for carcinoma of the cervix. Since her menstrual periods began again, it is obvious they did not think she had carcinoma of the cervix because an adequate dose of radiation for this condition brings on the menopause Later she had deep x-ray therapy One wonders why she was given 1200 r If you want to sterilize a patient you have to give 1500 to 1800 r, and the usual dose for fibroids is about 1800 r When x-ray therapy is used it ought to be given with the idea of accomplishing something A few years ago I asked an x-ray department to sterilize a woman for me She had had two children and had lost an arm with sarcoma and did not want any more babies X-ray treatment was given, and she was assured she would have no more pregnancies After two years she had another baby I call insufficient dosage poor x-ray therapy Perhaps it is coincidence that this patient developed leukorrhea X-ray therapy following radium, especially after the lapse of years, might readily increase fibrosis around the uterus and thus cause soreness in the lower abdomen It is not inconsistent with a second radiation dose of any sort that the patient should complain of pelvic discomfort

Physical examination is as sparse as the past history, except as regards the local lesion

Sometimes excessive bleeding from the uterus is called vicarious epistaxis, as in cases of hypertension, but there was not much, if any, hypertension, and you notice that she did not complain of bleeding but only of pain and soreness "Abdominal examination was negative" We can rule out or qualify the degree of pain and soreness in the lower abdomen by this negative examination, that is, there was no local tenderness The pelvic examination likewise showed nothing There is a hiatus there A real pelvic examination should include vaginal and rectal examinations without anesthesia to go with the negative abdominal examination, but here we jump into an examination under ether, which showed a wide-open cervix. We do not know whether it was a nulliparous cervix or a multiparous one, but at any rate a tumor

felt through it which extended to and com
ely filled the external os If we piece that to-
er with the bleeding which started at forty
years and irradiation which did not prove to be
effective, it would seem to make the diag
s perfectly obvious

'e come back for our diagnosis to the com
causes of bleeding at the time of the meno-
e, and the one which is commonest is fibroid
bromyoma of the uterus The history is per
y characteristic of a submucous pedunculated
id or uterine polyp However, uterine bleed
may occur in cases with tumors of the ovary,
cularly following radium treatment, so the
part of the history fits perfectly well with
r a pedunculated fibroid, a submucous uterine
p or a tumor of the ovary When we come
ie physical examination we must assume that
had a pedunculated uterine tumor Could it
a adenocarcinoma? An adenocarcinoma may
ecrotic at the tip and the patient may give
tory similar to this, but I should expect that
would have had bleeding at the time of entry
not just pain and soreness If this is a true
detailed history and examination of the pa
, I believe she had multiple fibroids of the
is, one of which was a submucous pedun
ed fibroid She should have been operated
romptly and a clean sweep made of the pel
rgans.

- Joe V Meigs The chief reason this case
presented was to show the importance of
tage before radiotherapy even if one had been
tive seven years before. At operation the
x was first examined from below It proved
considerably dilated, and the tip of a pedun
ed tumor mass could be readily felt through
'ragments of this were removed for frozen
in diagnosis but showed such extensive necro-
iat Dr Mallory was unable to make a diag
and could only say that there was no evi
: of carcinoma

e abdomen was then opened, and a consid
y enlarged uterus was found It was note
ay that the enlargement was chiefly in the
al segment The ovaries were small and
hic, the tubes negative. A total hysterectomy
done

Clinical Diagnosis

omucous leiomyoma

Dr. Leland's Diagnosis

ltiple fibromyomas of the uterus, including a
submucous pedunculated fibromyoma

Anatomical Diagnosis

Leiomyosarcoma of the uterus.

Pathological Discussion

Dr. Benjamin Castleman When the uterus was opened a large, soft, sessile, polypoid mass was found adherent to the fundus, extending into the right corner and dangling down into the cervical segment almost to the external os It was about 5 by 4 by 4 cm in size. On section there was frank necrosis of the lower pole. The remainder of the tumor presented a more varied appearance than is usual for a fibroid Parts of it were firm and fibrous, others soft and apparently myxomatous, and still others hemorrhagic. Fixed sections showed evidence in some places of benign leiomyoma, but in other areas unquestionable leiomyosarcoma The findings fit the theory that these myosarcomas frequently, perhaps usually, result from a sarcomatous change in a pre existing benign fibroid There are some people who believe that such a change never occurs, that a leiomyosarcoma originates as a leiomyosarcoma, but I think the sections in this case certainly favor the first hypothesis This has been true of the majority of cases of uterine leiomyosarcomas which we have seen in this laboratory

Do you want to give the follow up, Dr Meigs?

Dr. Meigs Two years later she developed a mass in the right upper quadrant encircling the ureter and blocking the kidney She had occasional fever and occasional pain in the right flank We were unable to remove the tumor, and she has since had x ray treatment, to which she has responded very well Six weeks following the last x ray treatment you could not feel the tumor in the right upper abdomen I am confident, however, that it will come back

Dr. Alfred Kranes What was the original diagnosis following dilatation and curettage?

Dr Meigs Hyperplasia of the endometrium

Dr. Leland I agree with Dr Meigs on the question of diagnosis prior to x ray I do not believe that x ray should ever be given without a positive diagnosis, and I do not consider that a clinical diagnosis is sufficient I shall go back still farther and say that this patient should have been operated on one year after radium treatment Radium treatment was given to stop the bleeding and bring on the menopause. As this was not accomplished there was something going on which should have then had the advantage of surgery

CASE 25342

Presentation of Case

A fifty-two-year-old unmarried telephone operator was admitted complaining of vaginal bleeding

Seven years before admission, although she had previously had regular normal periods, she began having an almost steady flow which lasted for a year Dilatation and curettage were performed at another hospital, and she was then given fifty hours of x-ray treatment over a two-year period, following which there was no flow for about a year From that time until entry she had very irregular staining, sometimes flowing, associated with hot flashes, sweating and weakness which were not helped by endocrine therapy She had recently had a period of increased flow lasting two weeks, associated with the passage of some black material She bruised very easily Her past and family histories were noncontributory Her catamenia had been normal until the onset of her present illness

Physical examination showed a well-developed and nourished woman Examination of the head was negative The heart was enlarged to the left, but there was no evidence of cardiac weakness The blood pressure was 185 systolic, 150 diastolic Abdominal examination was negative The pelvic examination showed a small clitoris The cervix was small The uterus was not very large and was movable, there was a questionable slightly tender mass on the left side

The temperature was 98°F, the pulse 80, and the respirations 20

Examination of the urine was negative A phenolsulfonephthalein kidney-function test was negative The blood showed a red-cell count of 3,980,000 with 75 per cent hemoglobin, and a white-cell count of 6700 with 56 per cent polymorphonuclears The basal metabolic rate was +7 per cent An electrocardiogram showed slight inversion of T_1 and low T_2 and T_3

On the fourth hospital day an operation was performed

Differential Diagnosis

Dr Somers H Sturgis This patient when she was forty-five years old had a sudden onset of a steady flow which lasted for a year There are three categories into which the diagnosis of bleeding might fall at this age The first is functional bleeding due to failing ovaries At the time of the menopause's approach, the ovaries gradually become exhausted and one of the first characteristic features of ovarian failure is lack of ovulation With failure to ovulate there not infrequently develop one or more follicular cysts Attendant on this cyst formation there is a steady production of estrin associated with hyperplasia of the endometrium, and as a result, menorrhagia frequently occurs In the absence of any other causes for menorrhagia such bleeding is put down as functional bleeding due to failing ovarian function The second category of bleeding at this age is that due to benign tumors of the pelvic organs, and the third obviously is that caused by malignant tumors At this age then a year's steady flow demands an immediate dilatation and curettage for diagnostic purposes This was performed at another hospital Such a procedure should lead to a diagnosis, and the treatment attendant on that diagnosis should give us some indication into which of the three categories of bleeding this case might fall

If the pathologist was confident that the curettage ruled out malignancy it may well have been justifiable to have given this patient a small sterilizing dose of x-ray or radium If, however, the curettage established the presence of a malignant growth it is conceivable that massive doses of deep therapy were given to control a tumor that was judged inoperable We are told that following the curettage she was given fifty hours of x-ray treatment over a two-year period Unfortunately such data give us no clue as to the actual dose of radiation X-ray dosage is figured in roentgens dependent on the amperage of the machine employed, and it is impossible to tell anything about the size of dose used here The only inference I can make is that since the treatments were extended over a two-year period the dose per treatment cannot have been very great

After this treatment she had no flow for about a year This brings us up to a time four years before her admission when she started to have irregular staining and flowing, with hot flashes, sweating and weakness I think it is fair to assume that if she had a year of amenorrhea, associated with other typical and characteristic symptoms of the menopause, following x-ray treatment that the latter destroyed the remaining ovarian function and produced a true menopause. Of course it is possible at forty-nine years that she merely had a normal menopause Certainly following x-ray treatment these symptoms can only be explained by menopausal symptoms showing complete ovarian inactivity The fact that these symptoms were not helped by endocrine therap indicates to me that in all probability this patien did not have a sufficient amount of therapy He flashes and so on can always be controlled b large doses of estrin, but such treatment is ofte impractical, it is, for one thing, very expensiv

and it is all too probable that this telephone operator was not in a position to afford treatments which to be adequate, would have cost her perhaps fifteen dollars a month

Just before admission she had increasing flow for two weeks and passed some black material Of course the latter might have been clots We also think of products of conception but we can throw this out since we have assumed that she had a true menopause and it therefore seems improbable that she could have had a miscarriage Black material likewise might have been necrotic tissue thrown off from some malignant growth

On entry she was a well-developed and nourished woman, in spite of the history going back seven years The heart was enlarged and she had a high diastolic pressure On pelvic examination the cervix was small In view of that statement I think it is fair to assume that there was no gross evidence of malignancy The uterus was not very large, it was movable, and there was a questionable slightly tender mass on the left side.

Laboratory examinations showed a normal kidney-function test. I am surprised to find that the kidneys functioned normally with a hypertension of 185 systolic, 150 diastolic. Certainly if this hypertension had been in existence for some time one would expect some evidence of kidney damage. Perhaps the normal kidney function test justifies us in assuming that the hypertension was of relatively short duration She had a slight anemia, and her white-cell count was normal. An electrocardiogram showed slight inversion of T_1 and low T_2 and T_3, which I assume is corroborative evidence of cardiac disease On the fourth hospital day an operation was performed

In summary then this fifty-two-year-old woman, six years before her present admission, had had a diagnostic dilatation and curettage for a year of steady bleeding Following this she had x-ray treatment. The menopausal symptoms which came on four years before admission following this treatment indicate in all probability that the irregular bleeding that returned and lasted to entry cannot be ascribed to partial reactivation of ovarian function Sometimes x-ray treatment fails to knock out completely the ovaries and functional bleeding may at times recur after x-ray treatment In this case, however, the appearance of irregular staining certainly cannot be a return of functional bleeding due to partial ovarian activity since characteristic menopausal symptoms came on

I think there are two alternative explanations of the story the original cause of the bleeding seven years before entry was either some sort of tumor that was not adequately controlled by the x-ray treatment and recurred a year or so afterward to produce more bleeding or was a benign condition which was adequately controlled but was followed three years later and four years before admission by the development of a new lesion that caused another train of symptoms It is reasonable to exclude any inflammatory condition since, although there was a tender mass or a questionable mass in the left vault, the white count does not bear out the possibility of pelvic inflammation I think we can also exclude hypertension in itself as a cause for this seven years bleeding Such hypertension might easily explain why she bruised easily However I do not believe that she could have had this hypertension for seven years without showing some evidence of renal disease Dr Leland has mentioned the fact that hypertension can cause menorrhagia or metrorrhagia It is perfectly true that this woman's hypertension might have accentuated or emphasized bleeding from some other condition but it is fair to exclude hypertension as the sole cause for this picture. Therefore, the differential diagnosis in this case seems to come down to the type of pelvic neoplasm, whether benign or malignant, that can best explain the symptoms.

If the first hypothesis is correct, that is that the same condition existed from the start of this woman's illness and was temporarily controlled by radiation but recurred later, certainly this duration of seven years is in favor of a benign tumor Uterine fibroids or polyps would perhaps be the most frequent cause of bleeding of this sort It is almost characteristic of submucous fibroids in the uterus not to respond well to x-ray treatment The fact that the uterus was not very large leaves us the possibility of a submucous fibroid or endometrial polyp which could quite well explain the whole picture except for one questionable detail, namely the slightly tender mass in the left side This mass might have been a cyst in the ovary In functional or benign uterine bleeding occurring at the menopause, as mentioned before it is not at all infrequent for the ovaries to develop follicular cysts but if the patient really had adequate x-ray treatment, I should be surprised to find cystic ovaries still present seven years or five years after such treatment However I cannot entirely exclude the possibility of follicular cyst of the ovary, with submucous myoma or an endometrial polyp

Let us go back to the second hypothesis that the original bleeding could be explained on a benign basis and that the second onset of bleeding four years before entry was caused by a malignant growth By decreasing the duration of her final disease to four years, we have opened up the possibility of malignancy of the pelvis Adeno-

carcinoma of the fundus or adenoacanthoma of the endocervix or endometrium seems to me unlikely for the reason that these tumors are rapidly growing, in four years' time we should certainly not expect this woman to be well developed and nourished The fact that we have a fifty-two-year-old woman who had the menopause at least four years before and who entered with a story of bleeding might suggest to us a granulosal cell tumor Such a tumor by secreting estrin, the ovarian hormone, would build up a hyperplastic endometrium which then might well cause irregular flowing However, we must remember that she had had menopausal symptoms, a functioning granulosal cell tumor secreting estrin would at the same time inhibit or prevent the appearance of these symptoms, hence a granulosal cell tumor seems to be unlikely on this account

Finally there is the possibility of carcinoma of the fallopian tube Such a tumor might well stay encapsulated within the tube for a considerable length of time Irregular staining, sometimes flowing, could result from blood's passing down the tube into the uterus The passage of black material could be due to direct extension or invasion of the myometrium or the throwing off of necrotic tissues from the tumor in the tube Carcinoma of the tube would not necessarily invade the surrounding structures or fix at an early stage the pelvic organs to the lateral ligament It is possible, therefore, that even after a duration of four years the uterus might still be slightly movable The explanation of the symptoms in this case, therefore, could be as follows Seven years before entry this woman had failing ovarian function with benign uterine bleeding, adequately controlled by extended x-ray treatment over two years Four years before entry, however, a carcinoma of the left tube, developing slowly, started to cause irregular spotting and staining, gradually increasing to time of entry when this tumor had probably invaded the uterus or myometrium

The most probable diagnosis in this case seems to be either benign uterine bleeding associated with submucous myoma and follicular cysts of the ovaries or benign uterine bleeding followed by the development of carcinoma of the fallopian tube of not more than four years' duration I think the diagnosis of benign tumor is less likely than the second hypothesis, and I am inclined to make diagnoses, therefore, of hypertension and adenocarcinoma of the left fallopian tube

Clinical Diagnosis (Preoperative)

Menorrhagia

Dr Sturgis's Diagnoses

Adenocarcinoma of the left tube
Hypertension

Anatomical Diagnosis

Leiomyomas of the uterus, multiple, serosal and submucous

Pathological Discussion

Dr Tracy B Mallory This patient was explored by Dr Joe V Meigs who found a slightly enlarged uterus with numerous small pedunculated fibroids Presumably one of these was the mass felt in the left vault The tubes were negative, and the ovaries small and fibrotic A total hysterectomy was done, and when the uterus was opened after the operation, a submucous fibroid with an eroded, partially necrotic tip was found which without much doubt was the source of the persistent bleeding She made a rapid convalescence without complications from her hypertension

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MATERNAL HEALTH AND SUPERVISION IN A RURAL AREA

In April, 1939, the Milbank Memorial Fund published the results of a study under the above caption conducted by Dorothy G. Wiehl and Katherine Berry.* This study is one of a series in the development of a broad health program in Cattaraugus County, New York, which began in 1923.

Early in this movement emphasis was given to the application of proved health measures, including those pertaining to tuberculosis and health instruction for the care of infants. Certain significant facts indicated the need for remedial measures, for in 1926 and 1927 the resident infant mortality in the rural districts of this county averaged 53.5 per 1000 live births and nearly 80 per cent of the deaths resulted from childbirth, congenital diseases or other conditions of early infancy, the most important being premature birth. These facts indicated the need for information concerning the quality and availability of medical and nursing services for maternity patients. This study was conducted in the period from September, 1929, to June, 1932, under the auspices of the United States Public Health Service, the Milbank Memorial Fund and the local health department.

The area covered included families in five townships in the central part of the county, with regular visits by the investigator about every three months for information respecting illness, medical care and health supervision. Specific information about prenatal care, delivery, and postpartum health and care was obtained with a follow-up history of living infants.

During the study 213 women reported one pregnancy, 45 two and 3 three, a total of three hundred and twelve, with 278 live births (5 of which were multiple) 13 stillbirths and 21 abortions. Any termination of pregnancy with a duration of less than twenty-seven weeks was considered an abortion. Ten live babies and 3 dead ones were delivered before the ninth month of gestation, these with the 21 abortions make a total of thirty-four pregnancies terminated before full term. Excluding abortions the frequency of premature births was 4.4 per 100 births, while the figure for New York, exclusive of New York City, was 5.5 but included stillbirths after only five or six months' gestation.

The stillbirth rate of 41.7 per 1000 total births during the study is much higher than that of the resident stillbirth rate of 32.2 in the entire rural Cattaraugus County for 1930–1931. The corrected stillbirth rate for these five towns is 54.5 arrived at by including deliveries of inhabitants of the area temporarily outside. This high rate seems to be typical of this group of towns. The rate of deaths of children in early infancy in this five-town area seems to coincide with that in the rest of the rural area of the county.

So far as health facilities are concerned, three physicians lived in these five towns, others were

*Wiehl, D. G., and Berry, Katharine: Maternal health and supervision in a rural area. Milbank Memorial Fund Quarterly 17: 172–204, 1939.

available in adjacent villages and in Salamanca, and no family lived more than ten miles from a doctor A hospital above the northern and one below the southern border of this area were available, but neither maintained a maternal clinic or free-bed service The public-health nurses on the staff of the county hospital gave the only service, because of the vacancy in the office of medical director during the period under study The prenatal service consisted of educational visits to the home, but no blood pressures or urinalyses were done Physicians were supplied nursing assistance at delivery, if requested, and limited postpartum care was provided as indicated

Visits to maternity patients in 1926 varied from 8 to 13 per cent, depending on the existence of a medical director to plan and supervise the maternal program During the period of this survey nurses' visits began in the first trimester in 90 cases, in the fourth and fifth months in 56, in the sixth and seventh months in 57, in the eighth month in 19 and in the ninth month in 8, but 62 had no prenatal care Forty per cent of the prospective mothers either had no supervision or made only one visit to the doctor for prenatal care, but 51 per cent who registered with a physician before the fourth month made repeated visits Obviously many opportunities for prenatal care were missed, but whether the inadequacy was due to the physician or to the patient is not made clear Although it was the custom of physicians to make a urinalysis on each visit by the patient 19 per cent had had no urinalyses and 9 per cent had had only one specimen tested

Tables relating to prenatal care show that only 24 women had been visited by the nurse before any prenatal medical care had been given, and 18 of these later visited a physician, hence it is shown that case finding and advice do not accomplish all that is desired in bringing pregnant women to the doctor Even the experience of pregnancy does not seem to lead a large proportion of prospective mothers to secure preliminary medical service, for of 69 multiparous women in this series 19 per cent had no medical care for the current pregnancy, but figures are presented showing that the influence of the nurse can increase the number of visits to the doctor

The relation of the economic status to the quality of medical care for pregnant women is shown in this study by the finding that those in the higher income brackets received better care and that those who received less were found in increasing numbers as the economic status was lowered. Another factor entering into the disposition of the patient to secure prenatal care is that a woman who had passed through several pregnancies without mishap was less inclined to regard prenatal care as necessary as compared with the primipara who was more easily influenced

An interesting feature of this report is the list of twenty-four illnesses that were found to afflict the pregnant women Edema leads with 103 cases, then varicose veins 60, albuminuria 10, and abnormal conditions of the kidneys 7 There were only 2 cases of hypertension, syphilis, heart disease and goiter, and only 1 of diabetes, with several of less importance Only 1 case of eclampsia is recorded Of the mothers, 1 died because of an abortion, and 1 from "scarlet fever"

Two hundred and fifty-five were delivered at home, 23 in a maternity home, and 34 in a hospital. Among the 287 cases with complications of labor, there were 64 forceps cases, 9 versions, 6 breech deliveries and 3 cesareans

Complete maternity service included postpartum examination within six weeks, but of 267 women in the series, 78 per cent were given no postpartum medical examination This indicates the need for educational work with doctors as well as with the laity

In the list of complications after confinement there is evidence indicating that these women too often accepted poor health after childbirth as a natural sequence and that the mother's attention to the needs of her child often diverted her attention from her personal health problems

As one reads the record of this carefully conducted survey it is fair to state that the medical and nursing care of the pregnant women in these five towns at that time was far below the accepted standards of the profession It may be

ıder the stimulation of the information
d in this report, coodıtıons are now better
report will be of interest to physicians
ılic health officers

CIENCE OF PREPAREDNESS

ıat reminder of the probable impact of
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ıed and cross-indexed From these donors
an be taken without delay, citrated and
ın designated refrigerating plants
unique feature of the plan is that for stor
d transportation the facilities of the large
stributing centers have been made avail
d have been organized for the purpose The
eems ideal, with four prime factors already
ıental parts of the industry — suitable con
ın pint and quart sizes, machinery for
ıg and sterilizing the containers refrigera
temperatures above the freezing poıot and
ransportation under conditions of refrigera

umably the delivery of milk even during
ergency will be cootinued, aod it is also
presumed and fervently hoped that the de
for citrated blood will not turn the de
of milk entirely out of its oormal course.
wo will probably work out their destinies
parallel lioes aod in the same delivery trucks
e will come opportunity for the English
raise their well known flair for adaptability
difficult circumstaoces. Despite the identi
ıaracteristics of the bottles on a cold and
vinter s morn with Loodon, perhaps, blacked
here will be no consanguinity of cootents.
ıousewife cannot be expected to view with
ımity the appearance of a quart of blood
:r back stoop in place of the accustomed
ısey, nor will even a British surgeoo accept
lacently a pıot of medium cream for an in
ıous pick me up

MASSACHUSETTS MEDICAL SOCIETY

SECTION OF OBSTETRICS AND GYNECOLOGY*

RAYMOND S TITUS M.D., *Secretary*
330 Dartmouth Street
Boston

INVERSION OF THE UTERUS

Mrs C O'D., a twooty-six year-old para II, was advised to enter the hospital on January 23, 1933, because she was ooe mooth past term

Her family history was oegative, as was her past history, except for the usual childhood conditions such as chickenpox, measles and whooping cough Catamenia began at twelve, were regular with a twenty-eight-day cycle and lasted six to seven days Her last period began on March 15, 1932, making the expected date of coofinement December 22. Her first pregnancy had been terminated by a low-forceps delivery in September, 1931 The puerperium was uneventful Her present pregnancy had been normal in every respect.

On the morning of January 24, 60 cc. of castor oil was given, followed later by an enema Labor began late that day aod progressed normally but rather slowly until 8 a m., January 25 when the cervix was fully dilated An hour later a full term female child weighing 7 pounds, 10 ounces, was delivered with the aid of a small mediolateral episiotomy The cord seemed very short and after clamping and cutting it retracted to the vulva Followiog the delivery, the fundus could not be felt After the repair of the episiotomy the placenta appeared at the vulva Geotle manipulation by the Credé method caused the placenta, still attached to the fundus, to present through the vulva Up to then there had been no bleeding The patient was immediately put under deep anesthesia aod the placenta peeled off the inverted fundus A catheter was placed about the neck of the inversion and held by a Kelly snap This effectively controlled all the fundal bleeding while preparations were made for reposition of the inversion The replacement was readily accomplished, and the uterine cavity packed with a large strip One thousand cubic centimeters of 5 per cent glucose was started intravenously to combat mild shock The blood pressure never dropped below 100 systolic, 70 diastolic, although the pulse did rise to 140 and remained elevated for several hours. Posterior pituitary extract and ergot were given after the replacement and the

A series of selected case histories by members of the section will be published weekly Comments and questions by subscribers are solicited and will be discussed by members of the section.

fundus remained well contracted The pack was removed thirty-six hours later

The postpartum course was uneventful, and discharge examination on the nineteenth day revealed the fundus in position, somewhat subinvoluted, and the rest of the pelvis negative

Comment A possible cause of the inversion was the length of the cord It was found to measure but 25 cm, and since the implantation was moderately high on the left side of the fundus, there was probably a pull as soon as the head was delivered The placenta's being attached to the inverted uterus indicated a rather firm implantation

The use of the catheter as a tourniquet to control the hemorrhage during the time necessary to prepare for replacement undoubtedly saved much valuable blood and is a good point to keep in mind in these cases where hemorrhage and shock so often play a disastrous part

DEATHS

COOLIDGE — Algernon Coolidge, M.D, of Boston, died August 16 at the age of seventy nine.

Dr Coolidge received his degree from the Harvard Medical School in 1886 After two years' study in Vienna, he practiced in Boston and became a noted laryngologist.

In 1921, he became a trustee of the Massachusetts General Hospital where he had been chief laryngologist since 1893 Dr Coolidge served as professor of laryngology at Harvard and became professor-emeritus in 1925

He was a member of the Massachusetts Medical Society, the American Climatological Association, and the American Laryngological Association, of which he was a former president.

His widow, a daughter, two sisters and a brother survive him

MAINS — Charles F Mains, M D, died August 17 at at the age of sixty seven

After graduating from the Harvard Medical School in 1896, he practiced medicine in Dorchester for forty three years

Dr Mains was a member of the Massachusetts Medical Society and the Dorchester Physicians' Club

His widow and a daughter survive him.

ARTHRITIS*

Arthritis is a disease of the joints Changes take place within the joints which interfere with normal use, and the sufferer has pain, swelling and usually stiffness of the joints There are many causes for this disease Thus, arthritis is usually not one disease, but the evidence in the joints of several disorders of the body Sudden, severe inflammation of a joint we call acute arthritis A slowly developing, mild inflammation of the joints which lasts months or years we call chronic arthritis or chronic rheumatism A neglected or carelessly treated acute arthritis becomes chronic, and crippling may result. The chronic condition is more important because sometimes it causes little pain, and it can cripple before a person wakes up to what is happening

Acute arthritis is usually caused by one of three things certain kinds of germs or bacteria, such as those associated with pneumonia, sore throats, social diseases, and so forth, a fall or a blow, or overwork, or chemical agents, as in gout or gouty arthritis Sudden, severe attacks of acute arthritis in men are occasionally due to this last disease, which seems to be associated with diet.

A patient suffering from acute arthritis must be put to bed Indeed, he is so uncomfortable that he usually goes to bed voluntarily, and asks for relief of pain His joints should be kept quiet in splints part of the time. Local treatment to the joints should be given, and a persistent search should be made for the cause. This cause should be attacked and, if possible, removed Sometimes this means draining a joint surgically or later removing a focus of infection like the tonsils It may mean the use of drugs like sulfanilamide for certain types of infection or the drug colchicine for gout. It may require a careful study of the diet as well It certainly will mean avoidance of use of the affected joints until they have quieted down in order to prevent a chronic arthritis from developing, with resulting joint damage.

It is chronic arthritis that is especially important from social and economic points of view This oldest of known diseases flourishes in all the densely populated regions of the world, but especially in the temperate climates Except for mental disease, it causes more disability than any other disease. More people are affected by chronic arthritis than the number of all the people in the United States suffering from tuberculosis, diabetes and cancer combined There are 140,000 people in Massachusetts alone suffering from this disease that does not kill, but often cripples The economic loss resulting from this invalidism is enormous Only since the War has the situation regarding chronic arthritis been appreciated, and many workers are now trying to awaken people to the realization that something must be done to correct this condition by stirring up the interest of the public, and getting further help, in order to lighten the suffering and lessen the economic burden of the taxpayers

Chronic arthritis can be divided into two main groups those types of arthritis in which the cause is known, and those in which it is not. In addition, there are patients who have aches and pains in muscles and joints, and who think they have arthritis, but who really do not. Rather, these pains may be due to one of the five following causes physical exhaustion, worry and unhappiness, postural joint strain or standing in a drooping posture, thyroid gland deficiency, or the glandular readjustment in women at the change of life, which is associated with the characteristic symptoms of that time These conditions can usually be cured by appropriate treatment.

The types of chronic arthritis of which the causes are known may arise from infections like dysentery, pneumonia and the social diseases, gout, overuse or strain of the joints, or certain rare conditions The infections may be present in the joints, or the joint may be inflamed from the poison produced by infections elsewhere in the body These various infections comprise a long list of possibilities The infection must be found, identified, and then removed or treated with drugs or in some manner consistent with our knowledge of that particular disease. The principle of treatment is the same as in the treatment of acute arthritis Gout may be chronic as well as acute, it must be recognized, and a proper diet and proper medication prescribed

Mechanical irritation or trauma, as we call it, is a known cause of chronic arthritis People who use certain

*A Green Lights to Health broadcast given by Dr Francis C. Hall on Wednesday June 14 and sponsored by the Public Education Committee of the Massachusetts Medical Society and the Massachusetts Department of Public Health

excessively due to the nature of their work or to
reight, people who use joints incorrectly or out of
and people who injure joints from time to time and,
d of giving them proper time to heal keep on using
frequently develop changes in these joints which
cause chronic pain and disability We all develop
of these changes in our joints as we get old for
reasons. The best treatment for these conditions
'e best way to preserve these joints for long years of
ness, is to try to prevent this too early wearing out
nts by standing walking and sitting in a proper
e, by keeping our weight down to normal and by
; care not to injure or overuse painful joints. Once
damage to the joints occurs, they can never be
ht back to normal though much can be done to
ve function. If injury of joints by these ways
be treated as early and as effectively as wounds and
res are treated the results in prevention of crippling
be much better than they are now Even when
d the orthopedic surgeon can often do much by
y and appliances to make these joints much more
and to relieve their pain.

re are three types of chronic disease associated with
is whose exact cause is not known. Therefore we
io single cure for them. We do know a great deal
the nature of these diseases, and we believe that
ur present limited knowledge we can help nature
st the disease in a large percentage of cases. These
s are rheumatic fever hypertrophic arthritis or de
tive joint disease, and atrophic or rheumatoid
is.

umatic fever is a disease of children and young
While arthritis is frequently present and may be
it usually subsides, leaving normal joints. This is
due to the fact that the patient is in bed is running
and is not allowed to use these joints. The doc
hief fear is that his patient with rheumatic fever
ffer injury to the heart, for this disease is the chief
of heart disease. These patients often become
d because of the damage to the heart but not be
of damage to the joints.

ertrophic arthritis or degenerative joint disease is
se occurring most often in robust people over forty
of age. It begins in the cartilage lining the joint,
appears moth-eaten. It is only slowly progressive
is none of the signs of infection or inflammation
nsiderable evidence that mechanical irritation or
nd tear play a major role. There are many con-
ng factors playing minor roles. This type causes
; degrees of pain causes enlargement of joints, but
a severely crippling type of disease. These patients,
hers, need study correction of all contributing fac
id proper care of the joints.

phic or rheumatoid arthritis is the most dreaded
arthritis because it is the severely crippling type.
ype occurs in people under forty especially in
. It begins gradually usually in people with great
in people who overwork who have slept too little
are depleted by a series of infections. This type of
works until he drops, driving himself on in spite of
nts. At first there is mild joint inflammation (swell
in) and later permanent changes in the joints
The disease may go on for years, getting better
en getting worse The end result is deformity or
ng of the joints. Yet this end result is usually not
ry Taken early and treated wisely many of these
's have the disease stopped even though we may
ow its exact cause. Proper care of the patient
proper care of his joints, and correction of these factors which contribute to the patient's poor health are rewarding, but the treatment must go on for months. Supervision of the patient for years is necessary to prevent the disease from coming back.

* * *

Q In all these different kinds of arthritis what are the most important things for a patient to do to prevent crippling and to get well?

A The patient must give up the idea of a quick, specific cure. Only a small percentage of patients have a type of disease for which a specific drug can be given with expectation of a quick cure. Vaccines and sulfur have no proved value. If the patient does the proper thing quite early in the disease however, there may be a quick cure. He must get plenty of sleep a good diet and above all stop using the joints. These should be kept quiet, often for many weeks. If this is done early in the disease, before the joint is damaged, he should do well. He should keep in touch with his doctor so long as any arthritis is present.

Q Is nothing being done to meet this terrible scourge of chronic arthritis in the world?

A Yes, much is being done. Some twenty five countries have formed societies for the study and control of rheumatic diseases. They have international meetings for the exchange of ideas. Our American society has stimulated research in arthritis in hospitals, the formation of arthritic clinics and the exchange of knowledge through publications and meetings. We are trying to interest laymen and laywomen in joining and contributing money to the cause so that we may prevent serious disease from occurring by treating it vigorously early in the disease before crippling occurs. With more money more hospital facilities and more co-operation we could do much to correct this condition of 140,000 sufferers from chronic arthritis in Massachusetts, even with our present knowledge, just as was done in the campaign to stop tuberculosis.

RESOLUTIONS

The following resolutions were adopted by the Executive Committee of the Senior Staff of the Boston City Hospital at a meeting held on August 10

ROBERT C. COCHRANE
Secretary pro tempore

GEORGE PHILLIPS REYNOLDS

George Phillips Reynolds, junior visiting physician died on June 6, 1939 Dr Reynolds was the fourth of his family in direct line to play a distinguished part in medicine in Boston. Handicapped from early childhood by a damaged heart he brought to his patients a sympathy and quick understanding distilled from personal suffering Indeed his own experience gave him an insight into the problem of psychological adjustment to physical disability which he utilized to great effect. In his teaching his writing and his own practice he emphasized consideration of the whole man and the environment in relation to the patient's symptoms. He was actively interested in the social service aspect of medicine and in coordinating it with the clinical work at the Boston City Hospital He gave much to the hospital and his loss will be felt far beyond the confines of those who knew him

personally The Staff will always revere the memory of his devotion, his kindliness, his ability and his courage.

PAUL THORNDIKE

Paul Thorndike was born in Beverly, Massachusetts, in 1863 He received his preliminary education in the West and graduated from Harvard College in 1884, being given his medical degree in 1888 from that university In 1887, he began service at the Boston City Hospital as a house officer on the Ophthalmic and Aural Service. This was followed by a surgical internship at the same institution and by a similar service at the Boston Lying-in Hospital. He then spent some time in Vienna and on his return to this country served as surgeon to the Out Patient Department of the Carney Hospital and at Long Island Hospital On February 2, 1894, he was appointed surgeon to the Out Patient Department at the Boston City Hospital This constituted his first step on the ladder which was to lead to the presidency of the Senior Staff of the hospital and his retirement from active service to the rank of consulting surgeon on October 30, 1925, at the age of sixty two years He died in Boston, May 28, 1939, while in his seventy-seventh year

It was during his association with the surgical staff of the Boston City Hospital that this institution started and largely completed the professional and physical expansion that has placed it among the leading teaching institutions of the country Much of this change and especially the more significant later part took place during that period in which staff activities were under his direct guidance. It is generally acknowledged that had this not been so, this development of the hospital would have been greatly retarded

The period during which all patients with laryngeal diphtheria were housed in a one-story ward on the site of the present children's building is well within the span of experience of older members of the consulting staff This ward connected directly to the house officers sitting room in the surgical building (old '42') by an electric circuit which when closed in the ward rang a gong in the sitting room This signal meant that one of the patients had an obstructed air-way It was the duty of any house officer within sound of the bell to take one of the already sterilized tracheotomy sets which were kept in the sitting room, run as fast as possible to the ward and perform an emergency tracheotomy on the obstructed patient. It was in such a surgical atmosphere that Paul Thorndike had his training as a house officer, and it was this training that laid the first foundation of that self-reliance and initiative which, associated with a kindly, patient and understanding disposition, made him such an invaluable help in the development of the hospital

By 1900 he was a first assistant visiting surgeon The South Department was then in existence The hospital had begun to increase in size in 1897 so that in 1899 there were 782 beds, the largest number — 227 — being surgical and the second largest — 220 — contagious Soldiers recently returned from Cuba with typhoid fever and malaria were so numerous that tents were set up for their accommodation where the superintendent's house now stands

Only fifteen years later, the first genitourinary service was formed with Paul Thorndike as the chief The hospital had taken its first step toward the segregation of specialized groups of surgical patients The service was located in Ward P — later replaced by the present Thorndike Memorial Laboratory

After the World War, a program of enlargement and reorganization of first the surgical and later the medical staff was started. Although arguments among the staff members were frequently vociferous and sometimes personal, and feelings ran high, through it all Paul Thorndike kept his head, smoothed ruffled feathers, reprimanded without the reprimandee knowing it and kept the respect, affection and admiration of all concerned, including the trustees and the executive and professional staffs His advocacy of changes was apparent only after mature and careful consideration of their possible value, and his methods of bringing them about were those of reasoned diplomacy

His academic connections were with the medical school of Harvard University For many years he taught general and genitourinary surgery to its students He was retired about 1926 as a clinical professor of genitourinary surgery

Brilliant as a doctor and teacher, Paul Thorndike's greatest attribute was his spontaneous and warm-hearted friendliness He had a great love and knowledge of music and for years attended the symphony concerts regularly As a toastmaster, an after-dinner speaker, an impromptu singer of lighter songs and above all as a companion gifted with the ability to transmute the dross of his friends of all ages into the pure gold of his own kindly humor, he was incomparable. He will be sorely missed and never forgotten by all those whose good fortune it was to have lived within his orbit.

MISCELLANY

TUBERCULIN ANERGY AND THE VARIABILITY OF TUBERCULINS

What is the physician to think when the x ray examination and the tuberculin test do not confirm each other? Dr Esmond R. Long, director of the Henry Phipps Institute in Philadelphia, discusses this situation in an editorial in the April, 1939 issue of the *American Review of Tuberculosis,* which reads as follows

The question of anergy to tuberculin in the presence of presumptive tuberculosis has been the subject of much recent discussion. Especially noteworthy have been the carefully conducted and concisely reported studies of Lumsden, Dearing and Brown on tuberculosis infection in school children in Coffee County, Alabama, and Giles County, Tennessee, which were reported recently in the *American Journal of Public Health* These investigators compared the incidence of positive reaction to several different kinds of tuberculin, in relation to the incidence of lesions diagnosed as tuberculosis in x ray films, and found not only a lack of correlation between the tuberculin reaction and the presence of shadows in the x-ray film interpreted as representative of tuberculous lesions, but a wide discrepancy in the percentage of positive reactions to different samples of tuberculin The lack of correlation between tuberculin reaction and x ray examination was most conspicuous in the case of films showing shadows interpreted as calcified lesions of primary tuberculosis.

SIGNIFICANCE OF CALCIFICATIONS

Numerous observers have noted the absence of tuberculin allergy in cases with presumptive evidence of old tuberculous infection in the form of calcified intrathoracic masses with the frequency of negative reaction in the presence of pulmonary calcifications ranging from 1 to 46 per cent in different series in the hands of different observers

These various studies have provoked widespread com-
ent. It is not the fact that allergy may be absent in the
sence of calcified lesions that is surprising but that
s may occur so frequently Failure of reaction in the
sence of calcified nodules is an old observation familiar
all workers in the field. In passing it may be noted
it in the first article published on the use of the puri-
d protein derivative (PPD) of tuberculin certain cases
h pulmonary calcification were recorded, with failure
reaction either to this type of tuberculin or old tuber
in.

lost investigators in the past interpreted these cases as
strations of obsolete infection and there is increasing
son to accept this explanation. Specific examples with
ification once positive and subsequently of lowered
nsitivity or even negative to tuberculin have been fre
ntly recorded. A plausible explanation of the waning
llergy is to be found in reports of the sterility of most
he old calcareous foci of primary infection.

ALLERGY AND RECOVERY

fore direct and significant evidence however on the
ing of allergy with recovery from active lesions of
erculosis is available in the records of BCG vaccina-
. Hundreds of thousands of human beings have been
berately inoculated with controlled dosage of the at
nated but living BCG and careful records have been
t of the intensity of the tuberculin reaction in rela
to the course of the infection set up In practically
those infected intracutaneously with 0 15 mg BCG
more, the reaction becomes positive in a few weeks
r reaching a period of maximum intensity it then tends
ease, and becomes negative after twelve months.

the light of these observations of complete healing
eventual sterility of spontaneous human lesions on
one hand and decrescence and disappearance of the
gy produced by artificial human infection on the
r it would not be surprising if the tuberculin reac
eventually became negative in all the cases of calci-
primary lesions, if no further infection occurred. In
there is good reason to believe that in many cases of
ive tuberculin reaction in the presence of calcified
of tuberculous infection, the reaction is positive not
use of the presence of the calcified lesion but be
e of a later superinfection.

ith the general decline of tuberculosis in the com-
nity with corresponding lessening opportunity for re
tion, it is only to be expected that an increasing num-
of non-reacting cases with calcification will be found.
well to keep the fact in mind that the calcified le
discovered in any survey today represent not the
e of tuberculous infection of the present period but
emains of tuberculous infection in the past.

oreover there is still room for doubt that all the
es commonly diagnosed as calcified nodules of pri
tuberculosis are really tuberculous. Particularly in
mmunity where calcifications are present in half of
adolescent population, as in certain of the regions
ed by Lumsden and Gass and their colleagues, it is
ient to inquire if there could be any cause other than
erculosis for the calcifications found.

ANERGY

ergy in the presence of active tuberculosis of the pri
or "childhood" type has been less frequently re
d and in some cases merely represents delay in the
rance of allergy It was pointed out long ago that
evidence of developing primary tuberculous infiltra-
of the lung may precede the development of a posi-
reaction. Anergy in the presence of well-established
lesions believed to be tuberculous is subject to much un
certainty because of the difficulty in proving the diagno-
sis of primary tuberculous infection in these cases. The
shadow itself is not distinctive, and it is the course of the
lesion rather than its character as seen in the x-ray film,
that is important. Infiltrations that disappear are apt to
be of pyogenic origin those that persist are probably
tuberculous Most of the reported cases of anergy in the
presence of active primary tuberculosis have not been
given the benefit of a time trial A diagnosis based on
persistence of the infiltration is still subject to much ques-
tion, for increasing understanding is bringing to light
other causes for such infiltrations, such as unresolved pyo-
genic infections bronchiectasis and so forth In brief
in a case of tuberculin anergy in the presence of supposed
active primary tuberculosis, the burden of proof is on the
diagnosis of tuberculosis.

As to the necessity of a reliable tuberculin there can be
no argument. It is true and has been known for years
that the various preparations of old tuberculin on the mar
ket vary greatly in their capacity to elicit reaction. It was
this fact that led to the search for a substance of specificity
stability and constant potency that could be substituted for
the highly variable old tuberculins in use. It is hoped
that the purified protein derivative (PPD) of tuberculin
will fulfill this need.

TUBERCULIN IN CASE-FINDING

For present purposes a distinction must be drawn be
tween tuberculin–x-ray surveys for the separate purposes
of determining the infection index regardless of morbidity
and tuberculous case finding No serious doubt has been
expressed over the value of tuberculin as a mechanism
for detecting ordinary cases of pulmonary tuberculosis.
The studies cited do not deal with this subject. On the
other hand studies of the tuberculin reaction covering
more than thirty years show that the overwhelming ma-
jority of patients with frank tuberculosis are positive to
tuberculin that they react to small doses and to most of
the many types of tuberculin on the market. Clinical dis-
ease has not infrequently been observed to develop with
alarming rapidity after the development of a positive tu-
berculin reaction, while there is no proved record of its
development in the absence of a positive reaction.

In the light of this experience no reason is apparent
to depart from the present established custom of using
tuberculin in case finding programs.

On the other hand good reason has been given for
pause in our efforts to determine epidemiological indices
of the amount of infection until more knowledge is ob-
tained. The concept of infection that is adopted will have
to meet the issue of existing as opposed to obsolete inva-
sion by tubercle bacilli. From a practical standpoint it
seems doubtful if there is nearly as much significance in
determining how many ever have been infected by tuber
cle bacilli as in finding how many harbor bacilli at the
moment. Whether this can be done or not remains to
be seen.—Reprinted from *Tuberculosis Abstracts* (Aug
ust, 1939)

MARINE AMBULANCE

As an extension of its medical consultation service by
radio to ships at sea, actual visitation by doctors to ves-
sels near Miami Beach, Florida has been recently inaugu-
rated by the United States Public Health Service Because
of the peculiar land contour and the location of the Gulf
Stream current hundreds of ships engaged in coastal
trade and in European trade to gulf ports round the

Florida peninsula every year without stopping and run a course just off Miami Beach

Surgeon General Thomas Parran has designated the Miami Beach buoy as the focal point for the new marine ambulance and medical consultation service to ships at sea off the port of Miami The quarantine boat *B W Brown* is used as the sea going ambulance

The Foreign Quarantine Division of the Public Health Service, headed by Assistant Surgeon General C L Williams, maintains the ambulance service at Miami Beach buoy, and the Hospital Division, under the direction of Assistant Surgeon General S L Christian, takes care of sick and injured persons who are removed from ships Dr G L. Dunnahoo, medical officer in charge of the Miami Beach Quarantine Station, has immediate supervision

During the last fiscal year the Coast Guard brought 62 seamen to Miami for hospitalization Acute appendicitis, pneumonia and severe injuries were the commonest emergencies In the opinion of the Public Health Service officials, many of these cases could be treated better on board ship, and under the new arrangement a physician will be sent out to the vessel whenever the ship's captain requests such assistance. After examination on board ship, patients will be given emergency treatment or taken ashore aboard the quarantine boat. This arrangement supplements the radio consultation plan which was started by the Public Health Service in 1922

In announcing this new development, Surgeon General Parran stated "The consultant and ambulance service to ships that run a course just off Miami Beach will probably result in the saving of lives in some cases and the alleviation of suffering in many instances Because of the convergence of ships there, this plan should be of considerable benefit to shipping in that area '

CORRESPONDENCE

ARTICLES ACCEPTED BY THE AMERICAN MEDICAL ASSOCIATION COUNCIL ON PHARMACY AND CHEMISTRY

To the Editor In addition to the articles enumerated in our letter of July 13 the following have been accepted

Gilliland Laboratories, Inc

Tetanus Toxoid, Alum Precipitated (Refined) — Gilliland

Bismuth Subsalicylate in Oil — Gilliland, 0 13 gm (2 gr) per cc.

Bismuth Subsalicylate in Oil — Gilliland, 0 2 gm. (3 gr) per cc.

Lederle Laboratories, Inc.

Antipneumococcic Serum, Refined and Concentrated, Type I — Lederle (packages of one vial containing 20,000 units and one vial containing 50,000 units)

Antipneumococcic Serum, Refined and Concentrated, Type II — Lederle (packages of one vial containing 20,000 units and one vial containing 50,000 units)

Antipneumococcic Serum, Refined and Concentrated, Types I and II — Lederle (packages of one vial containing 20,000 units and one vial containing 50,000 units)

Antipneumococcic Serum, Refined and Concentrated, Types IV and VIII — Lederle (packages of one vial containing 50,000 units)

Antipneumococcic Serum, Refined and Concentrated, Types V and VII — Lederle (packages of one vial containing 50,000 units)

Dried Ferrous Sulfate Capsules, 0 33 gm (5 gr)

Eli Lilly & Company

Ampule Solution Liver Extract, Purified — Lilly, 10 cc.

Mallinckrodt Chemical Works, Inc.

Sulfarsphenamine — Mallinckrodt, 0.9 gm ampules

Sulfarsphenamine — Mallinckrodt, 3 0 gm ampules

Maltbie Chemical Company

Capsules Digitalis Powder, 1 gr (2/3 U.S P digitalis unit)

Capsules Digitalis Powder, 1½ gr (1 U.S P digitalis unit)

PAUL NICHOLAS LEECH, *Secretary*

535 North Dearborn Street,
Chicago, Illinois

REPORTS OF MEETINGS

MIDDLESEX SOUTH DISTRICT MEDICAL SOCIETY

At a special meeting of the Middlesex South District Medical Society, held on May 31, 1939, it was voted that the following reports be given further publicity, particularly through the medium of the *New England Journal of Medicine*

REPORT A

At a special meeting of the Middlesex South District Medical Society on February 15, 1939, it was voted "that the President appoint a committee of three which will urge every hospital of this district to make a charge for attendance on patients in the wards who have been admitted under the Ward Plan of the Blue Cross, and that Dr Mongan shall be a member of this committee." Pursuant to this vote the President appointed Drs Charles E Mongan, James H. Townsend and Harold G Giddings to carry out the instructions of the Society Dr Mongan was named as chairman, and Dr Giddings, secretary

In submitting its report the committee presents, first, a study of the provisions of this new Blue Cross Ward Plan, second, how it is being applied at the various hospitals in the district, third, an analysis of the situation as we see it, and fourth, suggestions which seem pertinent to the plan

First The so-called "Ward Plan" of the Blue Cross became effective in this district February I, 1939, all the member hospitals, except one, having previously agreed to accept patients under its provision Another signed the new contract under protest. The basic provisions of this Ward Plan contract are essentially the same as those of the semi private room service contracts, but as the Ward Plan is intended to reach a lower income group, it contains certain limitations not appearing in these other plans. For example, it is available only to employee groups when the employer agrees to deduct subscription payments from wages or salaries, while in the higher bracket employee groups we find that only "the cooperation of the employer is necessary in making membership available," and that he, the employer, has no obligation to deduct subscriptions Ward subscribers

admitted on the same basis and according to the ne rules and regulations of the hospital as any other rd patients and presumably are treated exactly as are se who are not Blue-Cross members. The Blue-Cross spectus specifically states that services of physicians

In other words, if a single individual without dependents, earns more than $1000 per year, he is not eligible for the Ward Plan. Monthly subscription rates are individual 60c husband and wife, $1.00 family $1.25 (On the semi-private and private services the corresponding

HOSPITAL	NO. OF SEMI-PRIVATE BEDS	NO. OF WARD BEDS OPEN TO BLUE CROSS	WARD BEDS OPEN TO COURTESY STAFF?	WARD RATES	RATES FOR PRIVATE PATIENTS IN WARD	WOULD PERMIT BLUE-CROSS COURTESY STAFF TO TREAT BLUE-CROSS PATIENTS IN WARDS AT WARD RATES?
ridge	20	20 male 20 female	No	24.00 (week)	28.00 (week)	No; two 15-bed wards open to courtesy staff; these not open to Blue-Cross ward cases; no obstetric service ward all obstetric patients private or semi-private; courtesy staff not allowed to treat open ward cases.
ridge City	18	40 male 68 female	No	17.50 (week)	No private patients in ward	No; doctors not allowed to charge for care of any ward patients; (City Ordinance)
on	9	13	Yes	No	3.50 (day) 24.00 (week)	No service- all patients private.
ngham	56	8 male 7 female	No	3.00 (day)	3.00 (day) 4.00 (day semi-private)	No signed Ward Plan under protest; inclination not to allow referring physician to treat Blue-Cross ward cases as private patients; question not yet settled
ace Memorial	29	14	No	3.50 (day)	No private patients in wards	No; Blue-Cross patients in wards are treated as semi private patients.
t	60	None	No	4.50 (day)	No private patients ward	No.
	18	7 male 8 female	Yes	2.50 (day)	3.00 (day resident)	Yes; provided patient comes in on $3.00 per day rate so recommended by referring doctor; out-of-town patients $1.00 more per day
s	7 general 7 obstetric	17 obstetric 45 surgical 31 medical 9 pediatric	Yes	3.50 (day)	5.00 (day)	No not less patient made up difference between what Blue Cross pays and regular charge for private ward patients.
zabeth's	52	20 male 32 female	Yes	15.00 (week)	15.00 (week) 2.50 (day less than week)	Yes has always been policy to allow referring doctor to take care of patients ward and will continue. Hospital staff is closed. Courtesy staff use Cardinal O'Connell House.
s	6	35	Yes	3.00 (day resident) 3.50 (day non-resident)	3.00 (day resident) 3.50 (day non-resident)	No.
ille	36	None	No	3.00 (day)	No private patients in wards	No
n		16 male 16 female 39 contagious 24 obstetric	Yes (obstetric, contagious, children)	3.50 (day)	4.00 (day obstetric) 3.50 (day contagious and children)	No; Insurance cases occupy small private ward $3.50 per day and may be charged by the doctor. They have a run of private patients.
n	18	18 male 18 female 15 obstetric 12 children	Yes	3.00 (day resident) 4.50 (day non-resident) 3.50 (day resident, obstetric) 4.50 (day non-resident obstetric)	3.00 (day resident) 4.50 (day non-resident) 3.50 (day resident obstetric) 4.50 (day non-resident obstetric)	Yes.

tients may have own physicians, provided they pay the difference of $1.00 between ward and semi-private rates. Have had 3 Blue-Cross ward patients the past year none of whom could afford to pay private physician has all been hospital patients before, and have never paid hospital 5th.

geons are not included as a benefit." Payments for Plan subscribers may be made on the same basis as of the higher bracket subscribers, namely monthly rly semiannually or annually Family member -Ward Plan — "includes only husband wife and married children under the age of nineteen." Membership in the group is issued strictly on a maximum income basis as follows 'Only an employee whose e (or aggregate income of self and other persons d on his application card) is less than the amounts ed below is eligible for enrollment in the Ward

ANNUAL INCOME SCHEDULE

le subscriber (no dependents)	$1000
scriber and one dependent	$1250
scriber and two dependents	$1500
scriber and three dependents	$1750
scriber and four or more dependents	$2000

monthly rates are individual 85c husband and wife, $1.50 family $2.00) For the care of Ward Plan subscribers the Blue Cross pays the hospitals $4.00 per day which in several instances, is more than the hospitals charge their ward patients. This difference is supposed to cover extras such as medication anesthesia laboratory work and so forth the payments for semi private or private patients is $5.00 per day the latter being regarded as an allowance toward the regular rate of the private room selected the balance of which the patient must pay Provision is made for Ward Plan subscribers who, for some reason or other desire or require private or semi-private room service. This rule reads Ward Plan subscribers who upon recommendation of the doctor and member hospital occupy a private (or semi-private) room must pay to the hospital the difference between the hospital's

regular charges for services rendered and the charges for similar services in the ward as they would have been paid for by the Blue Cross" Blue Cross headquarters reports that so far very few patients have used the plan and that the majority of these have elected semi-private accommodations

From this brief analysis of the Ward Plan contract it will be seen that it is available only to a low income group, that it is voluntary, but that an individual may not subscribe except as a member of an employee group, that subscription payments must be deducted by the employer from the employee's pay envelope,—a procedure known in labor circles as the 'check-off,"—that patients entering hospital wards under this plan receive the same care as patients entering on any other basis, and that the plan is sufficiently flexible so that a ward patient may, under certain conditions, change his status to that of a semi-private patient or a private patient.

Second and Third In approaching the study of how the different hospitals within the district are handling Blue Cross patients coming in under the Ward Plan it was decided to obtain from each one certain definite data, which included the number of semi-private beds in the hospital, the number of ward beds open to Blue-Cross Ward Plan patients, whether or not members of the courtesy staff are permitted to treat patients in ward beds, the ward rates for staff cases, and the rates for private patients in the public wards, provided the hospital accepted patients on this basis In addition, each hospital was questioned as to whether it allows or would allow members of the regular or courtesy staff to treat Blue-Cross Ward Plan cases in the wards as private patients, and to charge for such treatments When the answer was "No' to this last question, as it was in most instances, the hospital was told of the vote of the district society on this matter, and urged to co-operate with the society, in accordance with the vote. The usual and undoubtedly correct reply was that the superintendent or secretary, whom we were interviewing, had no authority to change the rules as laid down by the trustees We then urged that the matter be presented to the trustees for their consideration In our conferences at the various hospitals we obtained many interesting, diverse, but always pertinent criticisms and suggestions

In all, we contacted the following thirteen hospitals either by telephone or direct interview—mostly the latter Cambridge, Cambridge City, Emerson (Concord), Framingham, Lawrence Memorial (Medford), Malden, Natick, Newton, St. Elizabeth's (Brighton), Symmes (Arlington), Somerville, Waltham and Whidden Memorial (Everett) They are all Blue Cross affiliates, and have accepted the Ward Plan The results of our questionnaire are presented in the accompanying table.

Fourth A review of these statistics reveals marked confusion of plans in the different hospitals No two seem to operate on the same basis Among the thirteen hospitals studied, only three would allow members of the regular or courtesy staff to treat Blue Cross Ward Plan patients in the wards, and to charge for such treatment. At the other ten, these Ward Plan patients must pay the difference between the hospitals' regular ward rates and their semi private rates, if the patients are to be treated by their own doctors as private patients

Our impression of this very mixed-up situation is that conditions differ considerably in different localities and that it is really up to the hospital staff in each instance to determine for itself how these Blue Cross Ward Plan patients should be handled. We think our recommendation should be simply that the various hospital staffs should urge their trustees to provide space for private patients under the Blue-Cross Ward Plan

CHARLES E. MONGAN, *Chairman,*
JAMES H TOWNSEND,
HAROLD G GIDDINGS, *Secretary*

REPORT B

This is the report of the committee appointed by the president, Dr Fred R Jouett, of the Middlesex South District Medical Society in response to the following resolution that the president appoint a committee to investigate the sentiment of the members of the Middlesex South District Medical Society as to what they consider a proper x-ray, anesthesia and pathological arrangement in the contract of the Blue Cross and that this committee present its findings to the society at a meeting at which time a discussion may be held and the sentiment of the members be finally forwarded to all parties concerned, namely the Blue Cross, Committee on Public Relations of the Massachusetts Medical Society and the member hospitals in the district.

We feel that if you asked members to express any opinion by letter the replies would be so few that they would not be representative of the sentiments of the whole society, therefore we formulated a questionnaire. The replies showed the tremendous interest of the members in regard to questions involving the Blue Cross From 940 letters sent out we received 503 replies In the past ten years 265 was the greatest number of replies received in answer to any questionnaire.

In answer to the first question, "Are you in favor of having the Blue-Cross contract state in bold type on the first page, 'The contract does not include fees for professional services,'?" 443 replied "Yes," 48 "No," and 12 did not answer the question.

In answer to the second question, "Should the Blue Cross and member hospitals be allowed to advertise and sell the professional services of any physicians as they now do in anesthesia, x-ray and clinical pathology,?" 53 replied "Yes," 431 "No," and 19 did not answer the question Thirty-four gave additional opinions by comment on the cards or writing letters

The committee, giving further thought to these notations and letters and also to the opinion of pathologists, has unanimously decided that it was unnecessary to include pathology in the questionnaire, though it was included in the resolution The consensus seems to be that pathology presents a problem different from anesthesia and x-rays so far as the practitioner is concerned.

Your committee feels that they were appointed as a fact-finding committee and that their duty has ended on reporting these facts to you

JOHN F CASEY,
ELMER W BARR

Pulmonary Tuberculosis in Practice A modern conception R C Wingfield 122 pp Baltimore William Wood & Co, 1937 $2.50

Any small book on a medical problem as important as that of pulmonary tuberculosis deserves attention This book is extremely well written on a good grade of paper, and contains many excellent photographs and charts depicting the various types of pulmonary lesions

The author has planned the book with the idea of presenting each separate type or grade of pulmonary lesion as a distinct clinical entity, and then with the aid of key names or symbols, he has produced a graphic chart showing the entire course of the disease. This scheme is a bit confusing, although it is fair to state that the author makes it clear that these various clinical types may tend to merge and overlap in any given case Possibly more attention might have been paid to detailed clinical management. In general, and considering in particular the size of the book, it appears to the reviewer that this is an excellent presentation of pulmonary tuberculosis in all its clinical aspects and worthy of a good reception

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A Medical Survey of the Republic of Guatemala George C Shattuck. 253 pp Washington, D C Carnegie Institution of Washington, 1938 Paper $2.50, cloth $3 00

Dr Shattuck and three other scientists visited Guatemala in 1932 and now report on the medical aspects of their expedition As in previous publications of a similar nature, the report is prefaced by a general survey of the country, accompanied by excellent maps Details are then given of the medical conditions found, particular stress being put on certain tropical diseases not ordinarily seen in northern countries The high standard set by previous publications is maintained in this splendid report which will be of interest to those individuals working in similar fields There are ample bibliographical references and a good index.

The Genuine Works of Hippocrates Translated from the Greek by Francis Adams 384 pp Baltimore Williams & Wilkins Co, 1939 $3 00

This is not a new edition of Hippocrates but simply a reprinting of the famous Francis Adams's translation, so long known to physicians The book is attractively produced in one volume and from the typographical point of view is an improvement over previous issues Moderately priced, it should have a wide appeal

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The Mental Hygiene Movement From the philanthropic standpoint 73 pp New York Central Hanover Bank and Trust Co, 1939

The Central Hanover Bank and Trust Company, of New York City, has issued a splendid book in its series on philanthropic information on the mental hygiene movement. It reviews the history of the care of patients with mental disease in a brief but concise way, and then points out the importance of the work of Clifford Beers, whose book, published in 1908, *A Mind That Found Itself*, quickly led to the establishment of the National Society for Mental Hygiene in New York City From this work has grown the great activity of the movement in the United States, with its penetration into hospitals for mental disease, psychopathic clinics, child guidance clinics and mental hygiene in colleges and in the schoolroom.

The book is invaluable as a summary of the mental hygiene movement and is an excellent example of what a banking organization can do in presenting facts to the public with the ultimate idea of receiving contributions to foster research

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Community Health Organization A manual of administration and procedure primarily for urban areas Edited by Ira V Hiscock. Third edition. 318 pp New York The Commonwealth Fund, 1939 $2.50

This is the third edition of "a manual of administration and procedure primarily for urban areas" It goes into most of the talked about aspects of community health For the person who has a particular interest or more especially for the person who has a particular problem, in community health organization this book has become extremely valuable. For example, parents who are dissatisfied with the school health services which their children receive, or those who know very well that their community resources are archaic, but know not how or why, may find in this manual a sound starting point for constructive effort. For such people the book will find its greatest usefulness The student of public health organization will find much of value within its pages while the casual reader will be reminded of many familiar interests The book is made in a highly satisfactory quality of print and binding

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Scarlet Fever George F Dick and Gladys H. Dick. 145 pp Chicago The Year Book Publishers, Inc., 1939 $2 00

Nobody in the country, probably, has a better right to speak with authority on the subject of scarlet fever than the Dicks And this treatise of theirs contains practically all the established information about the disease. Not even the opinions of the Dicks, however, are — at least at this stage of knowledge — likely to remove certain points from controversy They assume that the skin test which bears their name is a certain index of susceptibility or immunity as the case may be, they believe that it should be universally applied and that all positive reactors should be immunized by inoculating sterile scarlet fever toxin, and that all cases of the disease, even those very mild, should be treated with the specific antitoxin Possibly they are right on all these scores, but there are plenty of men with wide experience who are far from convinced of the fact and who may charge, in consequence, that the authors are too dogmatic. If their monograph hastens a solution of these problems it will have achieved excellent service.

The Complete Guide to Bust Culture A F Niemoeller 160 pp New York Harvest House, 1939 $3.50

The title may give the impression that this book was intended for stage folk, film stars, artists and models. In reality it was written for the general feminine public. The latter will find here considerable information with regard to the improvement of appearance as well as the enjoyment of good health

This work is a brief yet adequate discussion of the anatomy, physiology and pathology of the mammary glands and of the hygienic measures pertaining thereto. There are undoubtedly many women who are not likely to seek such information in the formal treatises which were designed for that purpose, yet may be tempted to read something that suggest methods of improving their looks The title and the opening chapter hold out such a promise and indeed to a certain degree live up to it. However, the book goes a step farther, for simultaneously with the suggestions in regard to the improvement of the

d contour of the breasts the reader is instructed in the ys and means of securing and maintaining a state of alth for these important organs. There will also be und a careful analysis of the exaggerated claims and zards of the 'beautyfying" and "normalizing" products widely advertised in the newspapers and over the air The following are some of the topics which are treated the book organotherapy diathermy massage, exercises, nture, diet, mechanical devices hydrotherapy creams, tions, plaside surgery pregnancy lactation and diseases.

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ies Beginning on the Earth R. Beutner 222 pp. Baltimore The Williams & Wilkins Co 1938 $3.00

"On the hot and sultry early earth loaded with lifeless game matter, violent thunderstorms raged Unspeakably brilliant and powerful lightnings played in the current, loosing frightful forces upon the carbon containing gases of the atmosphere, bringing into existence numerous compounds of carbon. After millions of years, self-regenerating enzymes were formed. Slowly the organizing forces of crystallization and of osmosis acted upon this material living organisms appeared."

The author accepts the above point of view and proceeds to go into the laboratory to find some developments of non-living matter which show a faint resemblance to certain features of life and so break down the impression that a gap exists between living and non-living nature The argument is followed objectively along four avenues. The first approach is through the consideration of "Vital Growth and Crystallization." The second approach discusses "Carbon as the Outstanding Property of Life. The third approach deals with "The Importance of Salt and Water for Life and Growth" and the fourth approach concerns "The Animal as a Machine."

The book is stimulating and easily read and excludes the use of terms such as "determinism" vital force," "entelechia" "psychoid" and "physis

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Surgical Pathology of the Diseases of the Mouth and Jaws Arthur E. Hertzler 248 pp Philadelphia Montreal and London J B. Lippincott Co., 1938 $5 00

This volume is the last of a series of ten monographs on surgical pathology It deals principally with lesions of the oral cavity and its contents, together with those of the nasopharynx, jaws and larynx. The inflammatory lesions and the benign and malignant neoplasms of these regions are specially stressed with very scanty reference to the diagnostic problems that arise in regard to the oral mucous membrane. The book is primarily based on the personal observations of the author in treating various lesions of a surgical nature over a long period of years and is not intended as a textbook for medical or dental students. In the preface the author states that the bibliographic references were not actually read by him but appended after the text was completed. This at least is a candid admission which can readily be confirmed after reading the various chapters.

The clinical illustrations are numerous and excellent and should be of particular interest to the surgeon. The pathologist who is familiar with the histopathology of the lesions described obtains very little information, as the descriptions are brief and the illustrations generally lack detail, due to low magnification. The general style reflects the individuality of the author and explains his recent literary success in his autobiography which appeals to the layman rather than to those who seek scientific knowledge.

A Manual of Fractures and Dislocations Barbara B. Stimson. 214 pp. Philadelphia Lea & Febiger 1939 $2.75

This handbook comes from the Fracture Service at the Columbia–Presbyterian Medical Center with the hearty approval of Drs. William Darrach and Clay Murray It is a pleasure to review such a tersely expressed thoroughly practical and up-to-the-minute manual on this subject. The 95 line drawings are well chosen.

The small size (12 mo.) the limp binding and the incorporated blank pages make the book especially serviceable to the undergraduate medical student in the lecture room the clinic and the library For the same reasons it will be found ideal by the practitioner taking a graduate course on fractures.

Clinical Gastroenterology Horace W Soper 314 pp. St. Louis The C. V Mosby Co. 1939 $6.00

The object of this work is to cover the field of gastroenterology with particular emphasis on diagnosis and treatment, the author writes in the first sentence of the preface. The reviewer believes he has attempted too much in a book printed in large type, of about 300 pages over half of which are given to cuts, legends and tables. The illustrations, chiefly roentgenograms are well produced. The classical lesions shown may lead the unmitiated to believe that the x ray diagnosis of lesions of the gastrointestinal tract is a facile procedure.

Following a discussion of dyspepsia appear eight illustrations of appendices visualized by x-rays, with legends but no textual matter If one accepts a roentgen diagnosis of appendicitis it should not be so summarily dismissed. At least the statement should appear somewhere that the appendix when visualized by x rays may assume the most bizarre appearance and yet not be pathologic.

Under hematemesis he gives no warning about the danger of x-ray examination following recent hemorrhage from peptic ulcer perhaps taking it for granted as obvious. No reference is made to the x-ray demonstration of esophageal varices and their importance in the etiologic diagnosis of hematemesis. He advocates large blood transfusions in massive hemorrhage from ulcer stating that fear of raising blood pressure and blowing out a fibrous clot is a myth." He incriminates even pasteurized milk as a disseminator of infection and advises the use of only evaporated milk because it is sterile. His statement that no doubt a large percentage of the populadon has established immunity to streptococcal infection but the ulcer padent does not belong to this class will not be generally accepted

He stresses the importance of proctosigmoidoscopy in lesions of the pelvic colon and believes diathermy preferable to surgery In early cancer of the rectum recounting eight such growths destroyed without recurrence in a period of three years.

The Patient Is the Unit of Practice Duane W Propst. 219 pp Springfield, Illinois, and Baltimore Charles C Thomas, 1939 $3.50.

This is a curious book which discourses in an amiable manner on medical practice. The author says that he has attempted to systematize and to arrange his own views on the subject in a form that will be concise, entertaining and usable for students. Thus he has divided his book logically enough into three parts. The first deals with the nature of disease the second with the diag

nostic or working hypothesis, and the third with therapeutic principles Each part has a well-chosen bibliography

The author is a good teacher, and writes well Obviously he enjoys people and managing their affairs He concludes that the successful doctor always has and always must regard the patient as the unit of practice He embroiders this thesis with a variety of case reports

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Studies from the Rockefeller Institute for Medical Research Vol 110 567 pp New York The Rockefeller Institute for Medical Research, 1939 $2 00

Further reports are presented on the papilloma virus in rabbits and on the virus of equine encephalomyelitis From the Division of Plant Pathology come a number of reports on the tobacco mosaic viruses

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Human Pathology A textbook Howard T Karsner Fifth edition. 1013 pp Philadelphia and London J B Lippincott Co, 1938 $10 00

The appearance of the fifth edition of Dr Karsner's well known book coincides with the twenty fifth anniversary of his professorship at Western Reserve University Dr Karsner s original purpose of presenting 'a text-book of pathological anatomy and histology, related to the broader functional aspects of disease" has been again realized in this new edition which represents a thorough revision of every part of the text. The sections on circulatory disturbances and cardiovascular disease, for example, embrace the important contributions of pathologic physiology More than two hundred and fifty new references have been added, and many older ones deleted The traditional division of the book into general pathology and special pathology remains unchanged.

The book is now well established as a reliable guide for the student and a handy reference work for the practicing doctor The keynote of the author's exposition of his subject may be obtained from his own words "Teleological interpretations of disease and its manifestations add nothing to precision of thought or expression and tend to discourage exact inquiry into the nature of mechanisms and processes which require elucidation The doctrine of purpose should not be permitted to smooth too easily the paths of learning, especially if this entails a sacrifice of the critical analysis of cause and effect. Without any desire to emphasize unduly a mechanistic viewpoint, every effort has been made to delete from this book all teleological implications" The reviewer applauds both the author's point of view and the accomplishment of his purpose

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Love and Marriage Havelock Ellis, et al 432 pp New York Liveright Publishing Corp, 1938 $3 75

This bulky volume consists of twenty two papers on sexual matters, including both the normal and abnormal, a consideration of the psychology and physiology of love, of spiritual factors in marriage, of mothers-in law, of marriage reform and of eugenics

It is very difficult to determine for what type of reader it is designed If it is for the general populace, it is certain to mislead on important issues and particulars For it contains, on the one hand, erroneous statements of fact and many doubtful points of interpretation The editor has evidently attempted to achieve "balance" by including radical and reactionary writers, but it seems doubtful wisdom to attempt to settle scientific questions by such a 'counting of heads."

The preface is written by the publishers and not the editor Accordingly, the reader is left in the dark concerning the qualifications of some of the eleven contributors The reviewer has been reading sexological literature for the last fifteen or more years, but he confesses that he has never heard of some of these contributors and knows nothing of their qualifications to discuss the subjects they take up How much more in the dark would be the average layman? It is not that an unknown writer does not or cannot talk sense, the point is that the lay reader is entitled to know something about the qualifications of the writers included On this score the editor has fallen down in a significant duty to his readers

The outstanding feature of this book is its verbosity and the wide diversity in the quality of its papers. They range from the brilliant and able essay of Professor Julian Huxley on "Marriage and Eugenics" to the dull, unimaginative, reactionary and factually incompetent contributions of Professor W Foerster, who contributes three chapters to this symposium. There is only one chapter by Havelock Ellis and that is undistinguished.

The reviewer is under the impression that most of these papers, and perhaps all of them, have been previously published in periodicals If so, we are not informed of this either by the publisher or editor

While there can be no doubt that the uninstructed lay public can learn something by reading this volume, it is not, by any means, the best possible treatise for physicians to put into the hands of those needing instruction. The language is often too technical, the views presented frequently too radical or unfounded There is a readiness in coming to dogmatic conclusions which will make those of scientific spirit take pause — an incident that is not a recommendation for any book There is no index.

Transactions of the American Gynecological Society Edited by Richard W TeLinde Volume 63 For the year 1938 296 pp St. Louis The C V Mosby Co 1939

This volume consists of papers read by the members of the American Gynecological Society at their meeting in Asheville, North Carolina, in May, 1938 All have been published during the past year in the *American Journal of Obstetrics and Gynecology,* and they represent the best of work and thought in gynecology and obstetrics in the various medical centers of this country

A description of each of the nineteen excellent articles is beyond the scope of this review However, one notes particularly the report by Rock and his associates of an electrical method for the determination of the time of ovulation In this work the resources of modern physics and electrical engineering are drawn on with very interesting results The rare masculinizing tumors of the ovary are reviewed by Novak, who adds 6 more cases to the literature, raising the total number reported to 51 So far as could be determined in the case histories of his patients, the tumors were usually large enough to be felt prior to operation, a point which is always raised in the discussion of the diagnosis in women who have become hirsute and deep voiced Bartholomew and Colvin, of Atlanta, in an article beautifully illustrated with colored photographs, demonstrate the importance of arterial disease and infarcts in the placenta in cases of toxemi pregnancy or eclampsia They were able to make a percentage of correct clinical diagnoses from a stud placentas from unknown sources The remainder of papers are of the same high order and are a credit to Society and to the editor of the volume

The book is 'required reading" for obstetricians gynecologists and should contain much of interest to student and general practitioner

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STUDIES ON HEREDITY IN JEWISH DIABETIC PATIENTS*

ABRAHAM RUDY M.D.,† AND CLYDE E. KEELER Sc.D.‡

BOSTON

HE following is a study of heredity in diabetic patients seen at the Beth Israel Hospital, since ening in 1928 The data have been collected the records of ward, private and outdoor pa

In addition a group of patients and their es has been studied as to blood types and groups in order to detect the relation if between the diabetic constitution and the n blood characters

the purpose of better comparison we have the same method of approach as Joslin and llaborators [1] who have collected the data of other writers

importance of heredity as an etiologic factor abetes mellitus is now generally accepted is inherited, it appears, is a constitutional nality which predisposes the subject to dia and such an individual is generally called a He may not himself develop diabetes, ansmits the predisposition to his children in which there is a diabetic parent, grand , uncle, aunt nephew niece or child are ed as hereditary, and those in which there abetic brother sister or first cousin are classi familial The more thorough the question e higher is likely to be the recorded number h groups Of 1376 patients seen by various ers of the hospital staff, 1037 had their fam tories recorded as to the presence of diabetes ade no statement as to familial history and herefore excluded from the series Among necessive non-diabetic patients admitted to the il, 63 reported one or more members of their s as having had diabetes.

e 1 illustrates the high incidence of diabetes families of diabetic patients The disease vn to be at least four times as frequent as families of non-diabetic subjects. Accord Cammidge it is even more than eleven times as frequent A comparison between Jewish and all diabetic patients shows only a slight difference in the incidence of heredity More detailed studies however bring out a higher frequency of diabetes in the Jewish families Cammidge and Fink found a lower incidence of diabetes (3 4 and 3 8 per cent respectively) in their mixed non-diabetic groups than we did in our Jewish non-diabetic pa

TABLE 1 *Comparative Incidence of Diabetes in the Families of Diabetic and Non-Diabetic Patients* *

Author	Diabetic Patients		Non Diabetic Patients	
	No. of cases	Percentage with family history of diabetes	No. of cases	Percentage with family history of diabetes
ALL PATIENTS				
Joslin et al. (Boston 1897–1928)	6357	24.5	—	—
Cammidge (London, 1934)	1000	39 6	500	3 4
Fink (Berlin 1925–1930)	1500	26 2	1000	3.8
Kern (Philadelphia 1934)	300	25.3	500	6.2
JEWISH PATIENTS				
Joslin et al. (Boston 1897–1928)	859	29 6	—	—
Rudy and Keeler (Boston 1928–1937)	1037	29 1	1000	6.3

Compiled from Joslin tables with the addition of our data

Cammidge it is even more than eleven times as frequent A comparison between Jewish and all diabetic patients shows only a slight difference in the incidence of heredity More detailed studies however bring out a higher frequency of diabetes in the Jewish families Cammidge and Finke found a lower incidence of diabetes (3 4 and 3 8 per cent respectively) in their mixed non-diabetic groups than we did in our Jewish non-diabetic patients (6.3 per cent) while Kern observed about the same percentage (6.2 per cent) Larger groups of Jews and non Jews will therefore have to be studied in order to reach a definite conclusion

Table 2 shows the incidence of diabetes in the families of Jewish diabetic patients as observed in our cases and compared with the group of mixed diabetic patients compiled by Joslin et al [1] From the data on the hospital records we found 29 1 per cent with one or more diabetic individuals in their families Interviews with 246 Jewish diabetic patients revealed a higher percentage of positive family histories, namely 87 (35.3 per cent) Of 302 patients with a positive family history of diabetes, 164 (15.8 per cent) gave a hereditary history, and 138 (13.3 per cent) a familial history only Adult

the Medical Service Diabetic Clinic and Pathological Laboratories, Beth Israel Hospital Boston Aided by a grant from the Charlton Fund, Tufts College Medical School

or in medicine Tufts College Medical School; associate physician of the Diabetic Clinic, Beth Israel Hospital, Boston

or in the Howe Laboratory Harvard Medical School; Guggenheim Fellow 1938–1939

Jewish diabetic patients (age twenty and over) show 28 6 per cent diabetic heredity — 15.3 per cent hereditary and 13.3 per cent familial Joslin's adult Jewish diabetic patients showed 29 6 per cent heredity Table 2 shows clearly the higher incidence of diabetic heredity in Jewish patients as compared with others The difference is in the familial type

TABLE 2 *Comparative Incidence of Diabetes in the Families of All and Jewish Diabetic Patients*

AUTHOR	NO OF CASES	FAMILY HISTORY OF DIABETES: HEREDITARY*	FAMILIAL	HEREDITARY AND FAMILIAL	TOTAL
		%	%	%	%
ALL PATIENTS					
Joslin et al (Boston 1897–1928)	6357	15.9	8 6	3 3	24.5
Cammidge (London 1934)	1000	—	—	—	39 6
Mueller (Berlin 1931–1933)	1372	—	—	—	25 4
Finke (Berlin 1925–1930)	1500	18 7	7 5	—	26 2
JEWISH PATIENTS					
Mueller (Berlin 1931–1933)	—	—	—	—	33 0
Finke (Berlin 1925–1930)	—	—	—	—	55 0
Rudy and Keeler (Boston 1928–1937)	1037	15 8	13.3	3 5	29 1
ADULT JEWISH PATIENTS					
Joslin et al (Boston 1897–1928)	889	—	—	—	29 6
Rudy and Keeler (Boston 1928–1937)	1015	15 3	13.3	3 2	28 6

*Hereditary consists of hereditary only and hereditary and familial cases

also the percentage of cases reporting hereditary and familial types of family history by sex The percentage of positive family histories for Jewish men was highest in Joslin's[1] group, namely 30.3 per cent as compared to 24 5 per cent in our male group and 23 0 per cent in all his male diabetic patients For Jewish women he found 29 1 per cent positive family histories, while we had 30.8 per cent and those in his group of all women totaled 26 5 per cent Jewish patients have shown a higher frequency of the familial type of diabetic heredity regardless of age This has been equally observed in both groups Our female Jewish diabetic patients show an especially high incidence in the total hereditary type at ages under forty five, with a marked decrease at the ages of forty five and over The same phenomenon was found to a certain degree in our Jewish male diabetic patients This may not be a significant finding, since the number of patients seen by us in the younger group was comparatively small Joslin found that the percentage of positive family histories in his Jewish male patients was distinctly higher at the younger ages and decreased perceptibly with age Among his Jewish women, however, the variation by age in this respect was relatively small The incidence of hereditary-type histories at the younger ages is distinctly higher among the Jewish patients than among all patients, whereas at the older ages the reverse is true This statement has been made by Joslin and is confirmed by our data

TABLE 3 *Comparative Incidence of Diabetes in the Families of All and Jewish Adult Diabetic Patients in Relation to the Age and Sex of the Patient*

AUTHOR	AGES	FAMILY HISTORY OF DIABETES: MEN: No of Cases	Hereditary*	Familial	Hereditary and Familial	Total	WOMEN: No of Cases	Hereditary*	Familial	Hereditary and Familial	Total
	yr		%	%	%	%		%	%	%	%
JEWISH PATIENTS											
Rudy and Keeler (Boston 1928–1937)	20 and over	362	13 2	11 3	2 4	24 5	653	16 5	14.3	3 6	30.8
	20–34	19	21 0	10 5	5 2	31 5	24	41 6	—	4 1	41 6
	35–44	43	25 6	2 3	2.3	27 9	84	33 3	9 5	8.3	42 8
	45–54	92	13 1	11.9	1 0	25 0	159	16 3	16.3	3 7	33.2
	55–64	112	15 1	13 4	4 4	28 5	243	12 7	15 6	2.9	28.3
	65 and over	96	4 1	12 5	1 0	16 6	143	9 0	14 6	2 1	23.9
Joslin et al (Boston 1897–1928)	Adult					30.3					29 1
ALL PATIENTS											
Joslin et al (Boston 1897–1928)	20 and over	2779	14.5	8 5	2 8	23 0	2914	16 8	9 7	4 0	26.5
	20–34	401	17 2	6 0	3 0	23 2	286	17 5	5 2	4.9	22.4
	35–44	418	17 5	7.9	2 4	25 4	328	18.3	8.9	4.5	17.2
	45–54	723	17 6	8.3	2 2	25.9	791	22 6	9 5	4 0	32 1
	55–64	799	11 8	9 4	3 8	21 2	928	12 5	10 6	4.3	23.1
	65 and over	438	9 1	9 8	2.3	18 9	527	14 2	11 4	2.3	25 6

*Hereditary consists of hereditary only and hereditary and familial cases

Table 3 shows the incidence of diabetes in the family history of adult Jewish and mixed diabetic patients in relation to the age of the patient,

The ratio of women to men is of interest (Table 4) Of 1376 patients, 487 were men and 889 women, a ratio of 1 1 8, or 82.3 per cent

women than men If we add their koown relatives with diabetes we find that the female diabetic patients (1173) still outnumber the men (658) by 78.2 per cent. Joslin[2] fouod that up to the end of 1928 the number of his Jewish women patients exceeded that of men by 46.3 per cent,

TABLE 4 *Age at Onset and Sex Incidence among Jewish Diabetic Patients*

	No Cases		Ratio of M to W	Per Cent of All Ages	
	MEN	WOMEN	M	MEN	WOMEN
Age at onset in years					
Less than 20	11	9	1 0 8	4 1	2.0
20–24	4	5	1 1.2	1 5	1 1
25–29	4	5	1 1.2	1 5	1 1
30–34	10	19	1 1 9	3 7	4.2
35–39	25	27	1 1 0	9.3	6.0
40–44	30	53	1 1 7	11.2	11.8
45–49	31	76	1 2 4	11.5	16.9
50–54	44	80	1 1 8	16.4	17 8
55–59	43	70	1 1 6	16 0	15.6
60–64	27	70	1 2.6	10.1	15.6
65–69	16	19	1 1.2	5 9	4 2
70–74	16	14	1 0 8	5 9	3 1
75–79	6	1	1-0 1	2.2	0.2
80 or over	1	1	1 1 0	0 4	0.2
All ages*	268	449	1 1 6		
Total patients†	487	889	1 1.8		
Total relatives with diabetes	171	284	1 1 6		
Total diabetic patients and diabetic relatives	658	1173	1 1..		

*Includes 11 cases with definite information as to date of onset of diabetes.

†Includes all cases and all ages with and without definite information as to date of onset of diabetes.

whereas among all patients the number of men was actually slightly greater than that of women considered by age of onset Jewish women patients in the late forties and fifties nearly twice outnumbered the men in both our and Joslin's series (Tables 4 and 5) In our group at the ages of sixty to sixty four the ratio of men to women was even lower, namely 1.2 6. It increased however, markedly at the ages sixty five to sixty-nine. Joslin found that Jews constituted 11.6 per cent of his male patients, and Jewesses 16.3 per cent of all his female patients. The proportion of his Jewish patients to the total patients was maximum in the late thirties, namely 18.9 per cent for men and 24.2 per cent for women

A study of our cases with a diabetic mate or with both parents diabetic shows the following results We had 20 married couples with diabetes, from the ages of forty-eight to seventy-seven, mostly betweeo sixty and seventy Two couples had no children Of the remaining 18, 6 of the couples each had 1 diabetic child

Pannhorst[3] found that if two parents were affected with diabetes, or if one parent was so affected and the other possessed a familial predisposition toward the disease, 15 per cent of the descendants presented diabetes, whereas if the disease was present in but one parent only 1.5 per cent of the descendaots were afflicted.

Among his Jewish patients Joslin[4] found that

TABLE 5 *Age at Onset Sex Incidence and Ratio of Jews to All Diabetic Patients (Joslin et al [4] Boston 1897–1928)*

Age at Onset	No. of Cases		Ratio of Men to Women	Per Cent of All Ages		Per Cent of Jews to All Cases	
	MEN	WOMEN		MEN	WOMEN	MEN	WOMEN
Less than 20	20	40	1:2.0	5 5	7.5	—	—
20–24	15	11	1.0.7	4.2	2.1	12.0	14.3
25–29	18	17	1-0.9	5.0	3.2	11.0	12.2
30–34	32	32	1 1 0	8.9	6.1	15 6	22.8
35–39	48	53	1 1 1	13.3	10 0	18.9	24.2
40–44	59	70	1 1.3	16.2	13.3	18.3	22.3
45–49	54	101	1 1.8	14.9	19.0	13.6	21.8
50–54	56	101	1 1.8	15 4	19.0	12 4	19.9
55–59	32	61	1 1.9	8.9	11.6	9.5	13.9
60–64	19	26	1 1.3	5.3	4.9	7 0	8.
65–69	6	13	1 2 1	1 7	2.5	5 1	7.0
70–74		2	1 1.0	0 6	0.4	2.9	2.9
75–79	—	1		—	0.2	—	3.0
Totals	361	528					
Averages			1 1 4			11.6	16.3

the onset picture was somewhat different from that of other patients According to his experience (Table 5) the Jewish patients developed diabetes relatively early The maximum numerical frequency of onset of diabetes in Jewish men was between the ages of forty and forty four and in Jewish women between forty five and fifty four

TABLE 6. *Age at Onset and Sex Incidence among Jewish Diabetic Patients (Combination of Tables 4 and 5)*

Age at Onset	No. of Cases		Ratio Men to Women	Per Cent of All Ages	
	MEN	WOMEN		MEN	WOMEN
Less than 20	31	49	1 1.6	4.9	5 0
20–24	19	16	1 0.8	3.0	2.6
25–29	22	22	1 1.0	3.5	2.2
30–34	42	51	1 1.2	6.5	5.2
35–39	73	80	1 1 1	11.6	8 2
40–44	89	123	1 1.3	14 1	12.5
45–49	85	177	1:2.0	13.5	18 1
50–54	109	181	1 1.8	16 0	18.5
55–59	75	131	1:1 7	11 9	13 4
60–64	46	96	1:2 0	7 3	9.8
65–69	22	32	1:1 4	3.5	3.2
70–74	18	16	1 0.9	2.8	1.6
75–79	6	1	1 0 3	0.9	0.2
80 or over	1	1	1 1 0	0 1	0.1
Totals	629	977			
Average ratio			1 1.5		
Grand totals*	1019	1701			
General ratio			1 1.6		

*Include our Jewish diabetic patients, their diabetic relatives and Joslin's Jewish diabetic patients.

Table 4 shows that the largest number of our Jewish men and women developed diabetes between fifty and fifty four, the same age Joslin found for all his men and women patients Root and Marble[5] from Joslin's clinic report in 1928 the maximum susceptibility to diabetes in all patients at the age of fifty-one for men and fifty five for women Further comparison of our table with Joslin's

shows a higher incidence of younger adults in his series of Jewish diabetic patients This may be partially explained by the fact that all his patients are private and that younger people are more apt to go to a private clinic Table 6 is compiled from Tables 4 and 5

A study of the A and B blood groups and the

TABLE 7 *Frequency of A and B Blood Groups (Compiled in Part from Wiener[7])*

	Author	No of Persons	Incidence of Groups O %	A %	B %	AB %
Jews						
Dutch	Herwerden	705	42 6	39 4	13 4	4 5
Polish	Holber and Mydlarski	818	33 1	41 5	17 4	8 0
Roumanian	Jonescu	1135	38 2	39 0	17 5	6 3
Macedonian	L and H Hirszfeld	500	38 8	33 0	23 2	5 0
Russian (Odessa)	Barinstein	1475	36 6	41 7	15 6	6 1
Jews (Boston)	Rudy and Keeler	444	36 7	40 7	16 4	6 0
Diabetic Jews (Boston)	Rudy and Keeler	200	43 5	32 5	16 5	7 5

M and N blood types has been carried out in some diabetic cases in order to determine whether there is any relation between the diabetic constitution and the known blood characters In accordance with the suggestions of the Committee on Medicolegal Blood-Grouping Tests of the American Medical Association, the term "blood group" as used here refers to the blood groups O, A, B

TABLE 8 *Frequency of M and N Blood Types (Compiled in Part from Ride[8])*

Author	Population	No Investigated	Percentage Frequencies of Types M	N	MN
Landsteiner and Levine	New York City (whites)	532	26 1	20 3	53 6
Schiff	Berlin	1420	30 1	20 9	49 0
Thomsen and Clausen	Copenhagen	442	29 9	25 6	44.6
Wiener and Vaisberg	Brooklyn New York	904	30 5	21 2	48 2
Hyman	Columbus Ohio	578	30 1	22 0	47 9
Rudy and Keeler	Boston (diabetic Jews)	106	35 8	25 4	38 6

and AB, and the term "blood type" to the more recently discovered types M, N and MN

Table 7 shows the frequency of the A and B groups in non-diabetic and diabetic Jews The non-diabetic Jewish patients at the Beth Israel Hospital showed a blood-group distribution strikingly similar to that of Russian Jews That of the Jewish diabetic patients showed no special characteristics

M and N blood-type determinations were carried out on a group of diabetic patients and their relatives Because of irregularities in the reaction of the M and N serums which we have obtained from time to time during our studies, we were forced to discard a large number of our tests, and the work was further limited by the fact that the serum is still difficult to obtain and is expensive. The data, therefore, cannot be considered sufficient to warrant any definite conclusions It may be said, however, that the distribution of the blood types M and N in diabetic patients shows no striking difference from that in non-diabetic patients already reported in the literature (Table 8)

SUMMARY AND CONCLUSIONS

A study on heredity in Jewish diabetic patients has been carried out in over 1000 patients and compared with the findings of other authors especially those of Joslin and his co-workers in Jewish and all diabetic patients The results are as follows

The family incidence of diabetes is four to six times as high in diabetic as in non-diabetic patients and is higher in Jewish than in all diabetic patients

Jewish diabetic patients at all ages show a higher incidence of the familial type of heredity than do all patients, and a higher incidence of the hereditary type at the younger ages

Jewish female patients outnumbered men in a ratio of [illegible] 2 1

The maximum susceptibility to diabetes in Jews (men and women) is at the age fifty to fifty-four the same as in the population as a whole

The distribution of the blood groups O, A, B and AB and of the blood types M and N in diabetic patients showed no striking difference from the distribution in non-diabetic patients

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SURGERY OF THE EXTRAHEPATIC BILIARY TRACT*

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SURGERY of the biliary tract is almost never emergency surgery Injuries to the liver or biliary tract, including the gall bladder occur only with other intra-abdominal or thoracic trauma his being so they concern us only as part of the esions present and will therefore not be discussed ere. Mechanical and inflammatory lesions bring nearly 100 per cent of the patients with gall-bladder, common duct and pancreatic disease to the urgeon, for less than 10 per cent have benign or nalignant growths. Consideration must be devoted to those cases which most commonly require urgical treatment, and to the surgical procedures leemed most efficacious for their cure

Acute and chronic inflammation of the gall ladder, obstructive conditions affecting the ducts, nd new growths, both benign and malignant, re the pathologic conditions that most concern s.

Acute cholecystitis is a distinct surgical problm, and today as when Murphy of Chicago the layos, Ochsner and others were urging cholecystctomy as preferable to cholecystostomy or drainge, there is much discussion pro and con But o me, an unanswerable argument against drainig a gall bladder instead of removing it is the act that I have seen 3 cases of primary carcinoma in gall bladders that had been drained very surgeon must have had similar experiences.

In the past year in our hospital there have been cases of acute cholecystitis in which no surgical rocedure was carried out and in both cases the postmortem showed that operation had been indicated This may seem a paradox when one remembers my first statement that gall-bladder urgery is never emergency surgery But in one these cases, seventeen days elapsed between e onset of the acute inflammation of the gall adder and death from perforation and peritois. The other patient lived sixteen days after e onset of the disease

Recently a patient on the medical service showed e initial signs of acute cholecystitis and was nsferred to my service. After twice seeing her consultation I considered that her attack was ending as she had had a normal temperature r ten days, a decreasing leukocytosis and only moderate local tenderness Yet at operation by my associate, on the nineteenth day of her disease a large abscess was found outside the gall bladder This parallels the finding in cases of acute appendicitis where the patient has survived the first two or three days of the disease, only to exhibit the signs of a hidden abscess

An overweight patient past forty years of age, especially a woman with children who has initial nausea and vomiting usually with constipation and slight distention, and who has pain in the right upper abdominal quadrant, with local rigidity, some fever and moderate leukocytosis, presents a picture which should certainly indicate acute cholecystitis. There is no contraindication to this diagnosis because true gallstone colic does not occur nor does any shoulder pain, and jaundice does not, except in the rare case, complicate the condition Such patients should have surgical advice promptly but it is advisable to postpone operation until the acute symptoms have subsided In my opinion only the occasional case, because of gangrene of the organ requires immediate operation, that is within the first forty eight hours

At operation performed after due investigation and proper preparation, cholecystectomy should be carried out if possible. One often finds that a tense, plum-red gall bladder which cannot be held or seized by any instrument, and the removal of which appears to be a hopeless task, will shell out easily after aspiration, and the postoperative course may be smoother than the days immediately preceding operation

A résume of my own cases shows that in 90 per cent the gall bladder was removed and only 10 per cent were drained Is abdominal drainage necessary? In almost all cases of cholecystectomy done for acute cholecystitis it is wise to insert a cigarette drain of soft-rubber dam 2 cm wide with gauze therein down to Morrison's pouch immediately underlying the sulcus of the gall bladder this is removed gradually after four to six days. A surprising amount of serous exudate seeps into the dressings and none into the peritoneal cavity This prevents postoperative vomiting hiccoughs and often even a serious local peritonitis In a few cases the ligature on the cystic duct fails to hold and bile escapes If this occurs while the drain or the sinus persists, no harm ensues and the biliary fistula soon closes

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spontaneously In one of our cases last year this biliary leak occurred after the sinus closed and we had a biliary ascites for weeks afterward Aspiration was again and again necessary, and enormous amounts of bile, 3000 cc at each aspiration, and later of bile-stained fluid, were removed Eventually the upper third of the wound was reopened, the remaining fluid removed by suction, and a drain inserted, after which healing rapidly followed This is the only case of free bile in the abdomen in large quantities that I have ever seen

In chronic cholecystitis, with or without stones, the surgeon should be able to remove the gall bladder, reperitonealize the sulcus by suture, and close without drainage This is the ideal operation, and these cases have less postoperative disturbance than occurs after simple appendectomy for acute appendicitis Such patients usually have no vomiting, seldom even require an enema and are up and about in fourteen or sixteen days

Where the common duct is opened in search for a stone or tumor, or to relieve stricture, the morbidity is greatly raised and the mortality is higher The inexperienced surgeon, or the surgeon with adequate technical skill but not wide experience, is frequently at a loss to decide whether choledochotomy should be done In a case of cholecystitis with gallstone colic where the gall bladder contains white bile, the common duct must be explored White bile indicates obstruction, and this may be in the cystic duct If so there will be no jaundice, the unit obtained by the van den Bergh test will not be raised Jaundice which follows an attack of gallstone colic and is accompanied by a rising blood bilirubin, especially if irregular fever be present, with or without chills, points to a stone in the common duct which must be found and removed

Patients who have been operated on and have had their gall bladders drained or removed not infrequently return with recurrent attacks of pain and jaundice and fever If the common duct has not been opened at the primary operation, it is a fair assumption that they have a common-duct stone If such symptoms follow soon after drainage of the common duct, inflammatory changes in the duct or cicatricial stricture is more likely

Jaundice is only a symptom, it is not a disease It is a sign of disease in the hematopoietic system, for example familial hemolytic jaundice, or of inflammatory obstruction in the liver bile channels for example catarrhal jaundice, or of acute suppurative cholangitis and resulting pylephlebitis following a carbuncle on the neck Again, jaundice may be the signal of obstruction in the ducts outside the liver, produced by calculi, by growths within the ducts, benign or carcinomatous, or by lymph nodes near the liver hilus, in two recent cases in our hospital such nodes were tuberculous, but they are usually malignant

The surgeon must adapt himself to conditions diagnosed or to those found at operation Therefore he should not open the abdomen to do an operation on the biliary tract, gall bladder or ducts unless he is competent to do any operation that may be required for the patient's relief In cases where a gall bladder has to be drained, one may, in a week or two, easily find out if the biliary tract is free by the injection of 10 cc of Lipiodol and olive oil into the biliary tree, after inserting a fine catheter into the sinus and using moderate pressure with a 20-cc. glass syringe The hepatic duct and the common ducts are visualized by x-ray, and one may see the dye entering the duodenum Any filling defect indicates stones or stricture and calls for further operation In obstruction below the junction of the cystic and common ducts, anastomosis between the common duct or gall bladder and the duodenum or stomach will quickly result in the disappearance of the jaundice, a rapid fall in the blood bilirubin and, even in carcinoma, a quite long period of health and comfort for the patient

Cholelithiasis is associated with so varied a symptomatology that it is as difficult to present all the facts as it is to count all the facets on all the stones found In general it may be said that in the group of patients who have mild symptoms referable to the biliary tract, but in whom no stones can be demonstrated by x ray, including dye studies, operation is not indicated If, however, x-ray and the dye fail to visualize the gall bladder, and the patient has symptoms referable to it, operation is indicated although no stones are seen If stones are proved to be present, even though they are associated with only mild symptoms, operation is indicated in order to prevent the complications of jaundice, acute cholecystitis, pancreatitis, and the like William Mayo says that "innocent" or "silent" gallstones are a myth

The onset of painless jaundice in a man of middle age or older is highly suggestive of carcinoma A diagnosis of catarrhal jaundice is made at first, but must be reconsidered if the jaundice persists for a longer period than four weeks, and the van den Bergh test remains elevated If pain initiates the attack of jaundice, then ceases, and the condition of the patient, even with the obstructive jaundice, is not progressively worse, a

stone in the common duct, often at the papilla of Vater, may well be diagnosed Jaundice, even for so long a period as three years, has been cleared up rapidly in several cases by the removal of a so-called silent stone from the common duct

The possibility of there being growths within the ducts themselves must always be borne in mind. I have found, as have my associates, both benign and malignant papillomas growing in the gall bladder and the common duct and surgical removal of these growths is often possible. Intra ductal carcinoma is, alas, too frequent a finding, and in the past two years there have been several cases on my service which worried us greatly All these patients had painless jaundice, with the stool seldom clay-colored, indeed the characteristic color was brown to a light sand color, varying from day to day and from week to week. The color index was always high the jaundice never decreased and often the patient s well-being was remarkable Two or three cases were operated on in an endeavor to relieve the jaundice, and if the gall bladder had not been removed at the first operation it was never ultimately found enlarged. Injection of the dye into the common duct at operation and an x ray plate taken on the operating table, would, I believe, at times make possible a diagnosis of the site of obstruction

An unusual surgical condition which may confront the surgeon is exemplified in a recent private case of Dr Archibald Stewart s, in which our assistant roentgenologist, Dr J W McKay diagnosed the condition from the x ray findings when the patient was given a barium meal because of indefinite digestive symptoms It was found that a large stone had ulcerated into the duodenum from the gall bladder the barium regurgitated into the biliary system and was found even in the biliary radicles in the liver Operation had to be carried out so as to prevent the ultimate formation of liver abscess.

Many cases with gallstones are easily diagnosed from the films taken following a barium meal It is therefore our custom to take a flat plate of the abdomen in all cases where gastric symptoms are present, with or without signs pointing to the gall bladder, and of course, in all cases where we suspect gallstones to be present The dye, orally or intravenously, is used only after this simple procedure has been tried, and we never use dye in cases of jaundice, or where we believe there may be serious liver damage.

For the practitioner, the sound course is to consider that potentially surgical services are required by every case of gallstone colic, with or without jaundice, but with definite signs of acute inflammation in the right upper quadrant namely pain tenderness muscle resistance and fever And every case of jaundice initiated by severe pain, or, in middle aged or elderly patients coming on painlessly should have a surgical consultation early Till the medical attendant establishes a definite cause and is sure there is nothing more than a simple catarrhal jaundice present his responsibility is as great as in the early hours of acute appendicitis As in the cases of gastric and duodenal ulcer medical treatment should be the first treatment often the sole treatment, but at times, surgical treatment becomes the only procedure that is justified In ulcer long duration of symptoms hemorrhage, gastric retention or perforation indicates the necessity for surgery So too, cholecystitis, stones and jaundice, secondary disturbances of sugar metabolism and pancreatitis call for surgery sometimes as in ulcer, promptly and urgently Usually, however due consideration may be given to the time, the place and the surgeon

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COMPLETE HEART BLOCK RESULTING FROM OVERDOSAGE WITH THYROID EXTRACT*

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THE purpose of this paper is to report a case of complete heart block resulting from excessive dosage with thyroid extract. So far as we have been able to ascertain from a review of the literature, there has never been a similar case recorded. Although this case represents an instance of induced hyperthyroidism, nevertheless certain correlations with true hyperthyroidism may be made.

The effects of uncomplicated hyperthyroidism on the cardiovascular system are well known. Dyspnea on exertion, palpitation, tachycardia, elevated blood pressure with increased pulse pressure, decreased vital capacity, diffuse and forceful apex beat, snapping heart sounds and apical and basal systolic murmurs are met with to a certain extent in almost all thyrotoxic patients. Disturbances in auricular contractility, among which may be mentioned auricular fibrillation, either permanent or paroxysmal, auricular flutter, auricular premature beats and paroxysmal auricular tachycardia are not infrequently encountered. Of rare occurrence is the presence of defective auriculoventricular conduction. The incidence of partial heart block in hyperthyroidism has been studied by a number of investigators, and varied results have been reported. Willius, Boothby and Wilson[1] in 1923 reported 1 case in a series of 298 which showed a prolonged P-R interval. Dameshek[2] in 1924 reviewed 141 cases, 2 of which had partial heart block. A greater incidence of delayed auriculoventricular conduction resulted from a study of 787 cases by Goodall and Rogers[3] a few years later, in which a prolonged P-R interval was found in 242 cases. In 225 cases of hyperthyroidism at the Boston City Hospital we were able to find only one case with a P-R interval above the normal. A more detailed review of the literature has been given by Davis and Smith.[4] There is general agreement, however, concerning the great rarity of complete auriculoventricular dissociation in cases of hyperthyroidism. The first recorded case was that of Merklen in 1882.[5] Since that time there have been reported 1 case by de Vries Reilingh[6] in 1915, 2 cases by Dameshek[2] in 1924 and 6 cases by Davis and Smith[4] in 1933, a total of 10 cases. There are no reports of cases in which the condition was induced by the administration of thyroid extract.

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CASE REPORT

A 33-year-old white, married Jewess was admitted to the First Medical Service of the Boston City Hospital on May 23, 1938, complaining of diarrhea of 1 week's duration and vomiting of 2 days' duration. The diarrhea continued unabated to the time of entry, and consisted of frequent watery stools containing no mucus, blood or pus. Vomiting occurred 5 days after the onset of the diarrhea and followed immediately the ingestion of any food by mouth, either solid or liquid. There was no abdominal pain, and other constitutional symptoms were lacking. A diagnosis of ptomaine poisoning was made by a local physician, and hospitalization was advised. One month prior to admission the patient was treated at home for a septic throat and enlargement of the cervical lymph nodes. Recovery was complete at the end of 2 weeks.

Three years before admission the patient was advised to take thyroid extract because of obesity associated with a low basal metabolic rate. Supervision of the dosage of the thyroid extract, however, was not sought, the patient having promptly resorted to the medication whenever she noticed an increase in weight. An accurate estimate of the amount of the drug taken during this period could not be obtained. For 5 weeks prior to the onset of the present illness she had been taking four or five 2 gr. tablets of desiccated thyroid extract (Parke-Davis) daily, which was 50 per cent stronger than the U.S.P. thyroid extract. She was thus taking the equivalent of from 12 to 15 gr. of the extract daily. The remainder of the past history was non-contributory.

Physical examination showed a well-developed and well nourished woman, apprehensive, restless, tossing about in bed, retching frequently and begging for water, which she would immediately vomit after taking a few sips. She was very nervous and irritable and at times became hysterical. The skin was sallow in appearance, dry, warm and inelastic. The tongue was coated and quite dry, and the mucous membranes of the mouth in general showed evidence of dehydration. There was a fine tremor of the extended tongue and the extended fingers. The eyes, ears and nose were negative. The external jugular veins were moderately distended. There were no masses, bruits or abnormal pulsations in the neck. The chest was symmetrical and of equal expansion, and the lungs were clear and resonant throughout. The heart was not enlarged, the sounds were of good quality, regular and slow, the rate being 32, P_2 was greater than A_2, no murmurs were heard. The abdomen was negative. The extremities were not remarkable. It was difficult to elicit the deep reflexes. The blood pressure was 110/64. The temperature was 97.8°F., the pulse 32, and the respirations 20.

The urine on admission showed a specific gravity of 1.010, a slight trace of albumin, no sugar and a sediment containing rare red and white cells. The hemoglobin

(Sahli) was 70 per cent, the red-cell count 3,630,000 and the white-cell count 25 600 A blood smear showed 88 per cent polymorphonuclears, 6 per cent lymphocytes 5 per cent monocytes and 1 per cent myelocytes the red-blood cells and platelets appeared normal The nonprotein nitrogen was 83 mg the plasma chlorides 504 mg per 100 cc., the carbon-dioxide combining power 22 0 vol per cent and the cholesterol 234 mg per 100 cc. A blood Hinton test was negative. Stool examinations were negative.

An attempt was made on admission to check the diarrhea which was quite troublesome, by the oral administration of paregoric and bismuth subcarbonate. Vomiting continued and parenteral fluids containing glucose, saline and iodine were resorted to On the following day the vomiting was somewhat less. The pulse was still low averaging 30 and there were short periods of apnea associated with convulsive seizures epileptiform in type, lasting from 10 to 15 seconds. An electrocardiogram showed the following auricular rate 94 ventricular rate 26 to 33 QRS complex 0 08 to 0 12 second T_1 upright, T_2 upright with low origin T_3 upright, T_4 upright with low origin left ventricular predominance ventricular premature beat In Lead 4 changing ventricular pacemaker The interpretation was "complete heart block, myocardial disease." During the next 36 hours the patient remained anuric, but responded finally to several intravenous injections of hypertonic saline. Signs of bronchopneumonia were elicited at the left base. The pulse rate was then 88 and the rhythm regular A repeat electrocardiogram showed normal sinus rhythm auricular and ventricular rates 88 P R interval 0 20 second QRS complex 0.08 second T_1 low T_2, T_3 and T_4 upright axis normal The interpretation was within normal limits." Throughout this period the patient appeared quite drowsy and apathetic and responded only sluggishly to stimulation. By the 5th hospital day the nonprotein nitrogen had reached 150 mg per 100 cc. and the creatine 6.2 mg. The blood chlorides were 595 mg per 100 cc., and the carbon-dioxide combining power 26 vol per cent. A portable chest plate showed areas of pneumonitis at the left cardiophrenic angle. Parenteral fluids containing saline, glucose and sodium bicarbonate were continued. Three days later there appeared slight pitting edema about the ankles and the parenteral administration of fluids was stopped. The urinary output gradually but steadily increased and the nonprotein nitrogen slowly fell on the 8th hospital day it was 120 mg per 100 cc. The signs at the left base were clearing the sallow appearance of the skin was no longer present and the general condition of the patient was markedly improved. During the subsequent week the nonprotein nitrogen rapidly fell to 37 mg. per 100 cc. Physical examination at that time was essentially negative. On the 23rd hospital day the patient was allowed up and 10 days later she was discharged. At the time of discharge the basal metabolic rate was —18 per cent, the blood cholesterol was 147 mg. per 100 cc. and the electrocardiogram was normal

COMMENT

A review of the literature reveals many conditions which have been associated with complete heart block. Among the infectious processes may be mentioned tonsillitis, rheumatic fever, diphtheria, pneumonia, gonococcal and other septicemias, influenza and subacute bacterial endocarditis. In these cases the block has been ascribed to the presence of localized inflammation in the A V bundle or in areas adjacent to it Occasional reports of complete heart block accompanying uremia have been noted With respect to the case here presented both pneumonic and uremic manifestations existed However it should be noted that evidences of pneumonia did not develop until four days after admission, at which time the heart rate and rhythm were normal, also that the blood nonprotein nitrogen did not reach its maximum until the fifth hospital day, two days after the heart had returned to normal We feel therefore that the presence of complete heart block in our case is to be attributed to the toxic state induced by the excessive doses of thyroid extract and to other less well-defined factors to be considered later

Concerning the pathogenesis of complete heart block in thyrotoxicosis much remains to be learned In an attempt to explain the block on the basis of anatomic lesions certain difficulties are encountered There is, first of all little evidence available at the present time in support of this concept In a review of the literature pertaining to the pathologic changes in the myocardium incident to hyperthyroidism there is found a great difference of opinion not only as to the nature of the morphological lesions but also as to whether such lesions actually exist. On the basis of both experimental and clinical studies several authors report varied changes in the heart muscle, among them being myocardial necrosis, cellular invasion, fatty vacuole formation moderate fibrosis, fraying of muscle bundles and alterations in the staining properties of the muscle fibers On the other hand some investigators deny that such lesions are specific and others that they exist at all The theory that the hearts of patients with hyperthyroidism are more susceptible to injury by infection and other toxic agents than those of normal persons was put forth many years ago Good pasture[6] in 1921 called attention to this fact In the more recent report of Davis and Smith[4] the role of infection is greatly stressed However in a careful study of these cases it appeared to us that there was a great discrepancy between the time relation of the infection (usually tonsillitis) and the appearance of the complete heart block. The presence of fever and toxic agents liberated during stormy postoperative courses could not be ruled out as agents contributing to the block At necropsy of a fatal case these authors noted an inflammatory lesion involving the bundle of His, in which could be demonstrated infiltration by polymorphonuclear leukocytes and monocytes, edema and questionable gram positive bacteria either diplococci or short-chain streptococci The

exact pathogenesis of this lesion, however, is not clear In a report of a single case by Steuer[7] the heart block seemed to be a function solely of the hyperthyroidism

In analyzing the numerous accounts of the pathological studies, certain deductions may be made There seems to be sufficient evidence to warrant the conclusion that hyperthyroidism increases the susceptibility of the myocardium to injury by toxic agents In some cases definite and varied anatomic changes do occur in the myocardium It is quite conceivable that the development of these lesions somewhere along the bundle of His may explain the occurrence of complete heart block This is apparently well illustrated in the fatal case of Davis and Smith It is true that such lesions are rare It is likewise true that complete heart block during the course of hyperthyroidism is also rare

An aspect of this problem which has been somewhat neglected is the physiological one As a result of the prolonged overactivity of the heart and the changes in the metabolism of the cells induced by the thyrotoxic state, the nutritional stores of the myocardium may become greatly exhausted It has been repeatedly demonstrated that in experimentally produced hyperthyroidism the cardiac muscle is found to be free of glycogen, both by microscopic examination and chemical analysis It is well known that cells from which the glycogen has been removed are rendered more susceptible to infection and other toxic agents Morphologic changes in the myocardium may result, these being secondary to the altered state of nutrition rather than to any specific action by the thyroid secretions Further evidence of deranged nutrition of the myocardium is afforded by the work of Bodansky,[8] who demonstrated that in rats the administration of thyroid extract and thyroxine reduced the creatine content of the heart muscle to 50 per cent of normal A more striking depletion of phosphocreatine was observed in a smaller series of experiments In a later communication Bodansky and Pilcher[9] noted that the restoration of the creatine concentration of the myocardium to normal occurred quite rapidly, and was well in advance of evidences of tissue repair In some cases normal values for creatine were found in the presence of moderate myocardial damage That similar changes occur in the phosphocreatine concentration of the Purkinje system is quite probable It would seem not unlikely, then, that the transient and, in certain cases, paroxysmal nature of some of the cardiac arrhythmias observed during the course of hyperthyroidism is a function not of morphologic changes in the myocardium but rather of chemical alterations, many of which are readily reversible In the case reported here, the transient nature of the heart block is apparent

In accounting for the cardiac manifestations of hyperthyroidism, then, many factors must be taken into consideration The altered metabolism and state of nutrition of the myocardium, together with other altered physiologic processes, the depletion of glycogen from the cardiac muscle, the reduction in the concentrations of creatine and phosphocreatine, the resultant susceptibility of such muscle to toxic and infectious agents, the morphologic alterations consequent to such nutritional disturbances and finally the possibility of a specific toxic agent elaborated by the thyroid gland and producing specific lesions by itself must be evaluated The evidence for the last, at the present time, is quite meager To attribute the presence of heart block to any one of the other abovementioned factors is, considering the state of our knowledge, still unjustified The answer to the problem will more likely come from a consideration of a combination of these factors, and after more careful physiological and pathological study of both experimental and clinical material has been made

SUMMARY AND CONCLUSIONS

A case of complete heart block resulting from overdosage with thyroid extract is reported A review of the literature since 1882 reveals a total of 10 cases of complete heart block developing during the course of true hyperthyroidism, but no cases in which the block was induced by the administration of thyroid extract

A brief discussion of the factors involved in the pathogenesis of complete heart block in hyperthyroidism is attempted The transient nature of the heart block in the reported case suggests that the disturbance may be a function of reversible chemical changes in the myocardium rather than of morphologic alterations

The case represents an excellent illustration of what may be expected from the uncontrolled use of thyroid extract in the treatment of obesity

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REPORT ON MEDICAL PROGRESS

BACTERIOLOGY*

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BACTERIOLOGY has made considerable progress in recent years, largely because of the increasing application of the methods of physics and chemistry to its problems the development of antigen analysis and the growing importance of the virus diseases For the busy practitioner who wishes to keep abreast of this advance, a few publications can be especially recommended In the journals, the annual review by Reimann[1] published in the *Archives of Internal Medicine* covers the field of clinical infectious disease, while some of the monographs appearing in *Bacteriological Reviews* summarize important laboratory investigations in special fields Two new books should prove particularly valuable one on sulfanilamide by Long and Bliss,[2] the other on immunology and its practical application to medicine surgery and public health by Zinsser, Enders and Fothergill.[3]

In this report we shall attempt to survey the recent advances in bacteriology in a broad way and select a few topics for detailed analysis which have a bearing on clinical practice

BACTERIA

The main interest in bacterial infections is focused on chemotherapy which we shall discuss below In pure bacteriology recent studies have been concentrated on the metabolism and chemical structure of bacteria Much has been learned about the exact conditions governing bacterial growth, the enzyme systems whereby microorganisms obtain their energy[4] and the nutritional requirements of individual bacterial species[5] The last-named investigations have led[6] to the development of synthetic media of known and reproducible composition which have been particularly useful in the production and purification of diphtheria toxin

Following the isolation of bacterial residue antigens" by Zinsser and Parker[7] and their definition as carbohydrates by Heidelberger and Avery,[8] the pathogenic micro-organisms have been subjected to an extensive immunological and chemical analysis, which has progressed furthest with the pneumococcus. As originally isolated the specific soluble substance or type-specific carbohydrate of the pneumococcus was considered to be a haptene (capible of reacting with specific antiserums but incapable of inducing antibody formation) but it has now been shown to represent a chemically altered product of the substance as it exists in the living organism By methods of extraction which maintained an acid reaction throughout, Enders,[9] as well as Avery and Goebel[10] isolated the mother substance an acetylpolysaccharide which possesses antigenic properties of its own Similar active fractions have been isolated from hemolytic streptococci[11] and the brucella,[12] typhoid[13] and salmonella[14] organisms Immunization of human beings with these chemically purified antigens is still in the experimental stage but Felton[15] has attempted it for pneumonia It is conceivable that our present vaccines may in time be supplanted by these preparations since the latter possess greater stability uniformity and potency This work has been carried to its logical conclusion by Goebel[16] with the synthesis of an artificial antigen obtained by coupling cellobiuronic acid, on which the type specificity of the Type 3 pneumococcus polysaccharide depends, to a protein by the diazo reaction Serums from rabbits immunized with this compound gave strictly type specific agglutination and *Quellung* reactions but conferred protection on mice against Types 2 and 8 as well as Type 3

Such work was made possible by Landsteiner's[17] fundamental studies on the nature of antigens, which have shown that despite their large molecular size the immunologic specificity depends on the presence of simple chemical groups or even stereochemical arrangements. This supports Ehrlich's original hypothesis of the chemical nature of antigen antibody union, whereas studies on the nature of antibodies have shown that many features of Bordet's theory of the colloidal nature of immunologic phenomena are also true since antibodies are large protein molecules which behave as colloids. It has been possible to obtain purified antibody solutions and thus to study the size, physical properties and chemical behavior of antibody molecules In quantitative studies with chemically pure reagents, Heidelberger and his coworkers[18] have shown that the union of antigen and antibody is a reversible one in accordance with the laws of mass action as originally postulated by Arrhenius[19] Since the union of anti

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gen and antibody can take place in multiple proportions rather than in single-formula masses, the neutralization of diphtheria toxin by antitoxin occurs along a wide zone instead of at a single point.[20] It is not possible, therefore, to postulate a single mass-action law for these reactions. Goodner, Horsfall and Bauer[21] have shown that antibody size varies with dilution, so that, for example, a given amount of antipneumococcus serum will combine with much more specific polysaccharide when it is diluted than would be expected from its original concentration. This may help to explain the observation of Nye and Harris[22] that the amount of antipneumococcus serum necessary to neutralize the specific soluble substance present in a consolidated lung was many times the effective therapeutic dose.

Chemotherapy

The introduction of sulfanilamide has made it possible to treat a large number of bacterial infections successfully, but has placed a greater responsibility on the clinician. He must make a rapid bacteriological diagnosis, be alert for toxic symptoms which often simulate those of the disease itself, and learn to judge the status of an infection which has been artificially modified by treatment. Since the practical aspects of sulfanilamide therapy have been covered in other progress reports in this series, we shall attempt to review what is known of its mode of action in hemolytic streptococcal infections. We believe that the use of related compounds such as sulfapyridine and the chemotherapy of other types of infection should be governed by the same principles.

Sulfanilamide owes its remarkable curative properties both to its efficacy against the infecting organism and to its rapid absorption, ready diffusibility into the tissues and lack of toxicity at therapeutic concentrations.[23] These pharmacologic properties are lacking in many other chemotherapeutic agents previously developed, which are much more potent in vitro. In fact, sulfanilamide interferes so delicately with the balance between the infecting organisms and the defensive reactions of the host that there has been doubt about which of these two components it affects. However, there is little evidence[24] that the drug stimulates the defense reaction and abundant evidence[25,26] that it makes the organism less virulent and thus amenable to destruction by the natural processes of resistance. How it does so remains somewhat of a mystery, but certainly it slows down the rate of multiplication of the bacteria.[27,28] This bacteriostatic effect, which has been clearly demonstrated in animals by Rambo,[29] varies in the test tube with different environmental conditions. In general the more favorable the environment for the streptococci the less effective sulfanilamide becomes. The accompanying table, modified from one in the recent article of Gay et al[30] is self-explanatory.

Factors Influencing the Effect of Sulfanilamide on Hemolytic Streptococci

Variables	Factors Favoring the Organisms	Factors Enhancing the Effectiveness of Sulfanilamide
Medium in which organisms are growing	Tissue debris — peptone[21] Diminished oxygen tension[22,23]	Pure serum or blood[21] Elevated oxygen tension[22,23]
Temperature	Normal body temperature	Fever (sulfanilamide bactericidal above 39.5°C in vitro[31]) Tillett phenomenon[32] (serum of febrile patients develops bactericidal power against hemolytic streptococci)
Bacteria	Strain resistant to sulfanilamide Large numbers[27] Highly virulent strain	Strain susceptible to sulfanilamide Small numbers[27] Avirulent strain*
Phagocytes	Leukopenia	Leukocytosis
Immunity	No antibodies	Antibodies
Blood sulfanilamide	Low or fluctuating level	Constant effective level (7–15 mg %)

*Some observations[31] tend to show that sulfanilamide is less effective against avirulent than against virulent strains in vitro but infection with virulent organisms is naturally more difficult to control.

Most of the factors favoring sulfanilamide operate in the blood stream and sites of rapid invasion, where the organisms are growing in tissue fluid containing serum. Those favoring the organisms are found in the areas of local infection, where large numbers of bacteria are growing at a diminished oxygen tension in a medium enriched by the products of tissue breakdown. In clinical and experimental infections the blood stream may be cleared fairly soon after treatment is begun, but the local infection persists much longer, and if sulfanilamide is discontinued too soon, the whole process will recur. Although it may be bactericidal under the most favorable circumstances,[31,36] sulfanilamide usually acts only as a bacteriostatic agent, so that phagocytosis is essential in order to get rid of the infecting micro-organisms. Since specific antibody is necessary for the phagocytosis of fully virulent organisms,[37] the degree of immunity of the host is very important. The administration of specific anti-serum has been shown to enhance the effectiveness of the drug in laboratory experiments.[38] This has been amply confirmed in the clinic by Finland et al.[39] using serum and sulfapyridine for severe pneumococcal infections, and by Lyons and Mangiarcine,[40] with immunotransfusion and sulfanilamide for hemolytic streptococcal septicemia. Although it has been suggested that sulfanilamide suppresses antibody formation,[41] the evidence indicates that this only happens when the infection is treated so early that an insufficient antigenic stimulus occurs. This is an added reason for continuing treatment for several days after an apparent cure, since

relapses will be more dangerous and more frequent if immunity has not developed

On the basis of existing knowledge sulfanilamide is indicated in practice in all severe infections due to the hemolytic streptococcus, meningococcus and gonococcus and in infections of the urinary tract Cases of gas gangrene brucellosis (undulant fever) and influenza bacillus meningitis also should receive sulfanilamide, although the evidence for its efficacy is still incomplete. Since sulfapyridine is irregularly absorbed and produces nausea and vomiting in most patients its use should be restricted to pneumococcal infections and desperate diseases such as bacterial endocarditis and staphylococcal sepsis where its greater potency may be decisive It should be emphasized that these drugs are not panaceas and do not supplant all well-established medical and surgical therapy They are more effective as prophylactic than as therapeutic agents, and we believe moderate doses should be given to cases of severe crushing injury, as prophylaxis against gas gangrene, or perforation of a viscus, where peritonitis may be expected During treatment an adequate concentration of the drug must be constantly maintained in the body fluids, for if it is allowed to fall below the effective level the organisms again begin to grow rapidly Therefore oral administration and frequent dosage are recommended

The development of an entirely new approach to chemotherapy is due to the efforts of Dubos and Avery In 1932 they[42] discovered in a bacillus isolated from a peat bog an enzyme capable of hydrolyzing the capsular polysaccharide of the Type 3 pneumococcus Preparations of this enzyme cured infected animals by destroying the capsules of the organisms, thus making their phagocytosis possible[43] Since then Dubos has been searching for a similar substance which would attack bacterial bodies He reasoned that since the decomposition of organic matter in soil was effected by micro-organisms, he might be able to develop a strain of soil bacteria capable of decomposing bacterial protein He kept adding washed cultures of gram-positive cocci to a sample of soil and eventually isolated a gram-positive bacillus culture filtrates of which were bactericidal for all the gram-positive but for none of the gram negative species tested He[44] has now obtained the active principle in nitrogen free form so potent that a small fraction of a milligram will kill cultures in vitro and protect mice against many fatal doses of pneumococci and streptococci

Active Immunization with Toxoids

In 1925 Ramon[45] showed that if diphtheria toxin was incubated with formalin for a long time it gradually lost its toxicity but retained its antigenic properties Such altered toxin called toxoid or anatoxin, is superior to toxin antitoxin as an immunizing agent, but contains considerable diphtheria bacillus protein, to which many people become sensitive during life, so it can be given only to children under five or six years of age For this reason the purification of diphtheria toxin by Eaton[46] and by Pappenheimer[47] is very important and it should soon be possible to obtain pure toxoid, safe for use at all ages Toxoid may be used as such or in the alum-precipitated form recommended by Glenny et al.[48] With the latter, fewer injections are given at longer intervals, since the antigen is fixed at the site of injection from which it is very slowly liberated

Toxoid may also be prepared from tetanus toxin by similar methods[49] and has recently been used for human immunization[50] Since sensitivity to tetanus bacillus protein does not normally develop, it can be used at all ages without danger of severe reactions. It confers an active immunity, which rises slowly reaching its peak after several months. The duration of the immunity is uncertain but probably extends for several years Within a year or two after the primary course of immunization, a single injection (*injection de rappel*) produces a renewed and more rapid rise in the titer of antitoxin which reaches its peak in two or three weeks and then slowly falls over many months[51] Such a procedure has advantages over the prophylactic injection of tetanus antitoxin since the latter does not raise the titer to so high a level lasts only two weeks and sensitizes the patient to horse serum This is important in connection with the possible necessity for repeated injection of antitoxin at the time of repair operations weeks after the injury The one drawback to the practical application of tetanus toxoid is the lack of a test analogous to the Schick test for determining whether immunization has succeeded However active immunization against tetanus is indicated for soldiers and people in hazardous occupations, and in civilian life is justified by its protection against the many minor injuries which are too trivial to require the use of antitoxin but which are always a source of worry to the physician Since these are particularly common in childhood many pediatricians are giving combined tetanus and diphtheria toxoids at the time of routine immunization against diphtheria Dosage consists of three 1-cc. doses of plain toxoid at intervals of two or three weeks or two 1-cc doses of alum toxoid at intervals of two months At present if a previously immunized patient is severely injured he should probably receive not only a single injection of

toxoid but the usual dose of antitoxin for immediate protection Experience in the future may show that the latter is unnecessary

Staphylococcus toxoid has been recommended for the treatment and prevention of chronic staphylococcal infections, particularly boils Since the immunology of these infections is poorly understood we shall not comment on this recommendation Satisfactory scarlet fever toxoid has not been prepared

FILTERABLE VIRUSES

Perhaps the most rapid advances have been made in this field A virus etiology has been proved for a number of important diseases trachoma,[52] lymphogranuloma inguinale,[53] yellow fever,[54] influenza[55] and canine distemper[56] Measles is probably a virus disease, but although it has almost certainly been transmitted to monkeys by Blake and Trask,[57] absolute proof of its etiology is still lacking The isolation of influenza virus was the result of Laidlaw's discovery that canine distemper was transmissible to ferrets Influenza has now been transmitted through ferrets to mice,[58] and thus a great deal of experimental work has been possible that could not have been done with larger animals Although human influenza is a pure virus disease, it is interesting that swine influenza, in its typical form, is due to two agents, a filterable virus closely related to the human virus and the swine influenza bacillus[59] This fact has aroused much speculation concerning the role of a virus in paving the way for bacterial invasion of the respiratory tract This hypothesis has been proved wrong for pertussis,[60] but Dochez et al[61] claim to have isolated a "cold" virus which causes human coryza and paves the way for pneumonia The latter theory must be confirmed Among the many new virus diseases described in recent years, the most important are those of equine encephalomyelitis[62] and benign lymphocytic choriomeningitis[63]

The sizes of various viruses have been measured by ultracentrifugation and ultrafiltration, and it has been found that they cover a very wide range The largest viruses, such as that of vaccinia, overlap the smallest bacteria and have infective units which are microscopically visible as elementary bodies, from which different antigenic fractions can even be extracted The smallest viruses approach the size of the largest known molecules, the proteins The virus of tobacco mosaic disease has been obtained by Stanley[64] in what he believes to be a pure crystalline form, and is a nucleoprotein with a probable molecular weight about twelve times that of horse globulin

As studies of immunity in virus diseases progress, its essential similarity to antibacterial immunity becomes increasingly apparent[65] Whatever differences there are depend on the different spheres of activity of the two types of pathogenic agents since bacteria multiply in the tissue spaces, while viruses can only multiply inside living cells Most of the difficulties of virus work spring from this obligate intracellular parasitism

Successful cultivation of the viruses can be carried out only by growing them in living susceptible cells, and the virus so obtained is really a mixture of virus and tissue proteins Many viruses can be readily adapted to tissue culture or laboratory animals, but others, such as that of poliomyelitis, cannot be Immunological studies must make use of the animal protection test, except in the case of a few virus diseases where special serologic reactions have been devised, such as the flocculation test in vaccinia

Neutralizing antibodies, analogous to antibacterial antibodies, develop after most virus diseases and their presence has been widely used by epidemiologists as proof that the patient has had specific infection In a study of yellow fever, its world distribution has been mapped by determination of mouse protective antibodies in representative samples of human serums[66] Similar epidemiological studies of influenza are in progress, but the work is complicated by the number of immunologically distinct strains of the virus[67]

Until recently it was thought that active immunization against any virus infection required the injection of living virus Satisfactory vaccination against yellow fever has been achieved by attenuation of the virus by repeated passage through mouse brain and chick embryo for several years and by injecting this living attenuated virus subcutaneously[68] But we now know that active immunization against certain viruses is possible with killed vaccine if enough can be injected[69] Thus any methods of virus cultivation which yield higher titers of virus in tissue are of great importance Goodpasture and his colleagues have shown that the developing egg makes an ideal culture medium for many viruses[70 71] For instance, the virus of equine encephalomyelitis reaches a very high concentration in the embryo, and this embryonic tissue ground, filtered and formalinized, makes a potent vaccine[69] Zinsser and his associates[72] have been able to cultivate large amounts of tissue on the surface of agar slants and thus obtain large yields of rickettsiae for the making of typhus vaccine

The therapy of virus infections has made little progress Chemotherapy has proved of little value[73] except in a few cases where its action is probably on secondary bacterial invaders[74] Convalescent serum has failed to influence the course

of these diseases, although it has been extensively tried in poliomyelitis,[75] but recent work with measles suggests that if convalescent serum is given early and in large amounts it may modify the disease.[76]

RELATION OF ANIMALS AND INSECTS TO HUMAN DISEASE

Although the transmission of disease from animals and insects to man is not a new concept, a number of recent discoveries have shown that more types of disease are spread this way in New England than has been generally recognized. Tularemia is the most important bacterial infection in the United States which is so transmitted. First recognized and described by members of the United States Public Health Service and now being found in many parts of the world, it is a naturally occurring disease of wild rodents, among which it is transmitted by the bites of bloodsucking insects.[77] The common tick of this region, the dog tick, *Dermacentor variabilis*, may harbor the infection, but in the wood tick, *Dermacentor andersoni* (fortunately a Western species), the bacterium, *Pasteurella tularensis*, is handed down from generation to generation in the ovum. Human cases develop from handling infected ticks or animals (mainly rabbits, although a great many animals are susceptible) or from the bites of infected flies. The recent case on Cape Cod[78] and the prevalence of ticks and rabbits suggest that this disease may become more frequent in this area.

Rickettsial infections are now recognized in all parts of the world.[79] Rickettsiae are tiny intracellular parasites of insects which are capable of infecting certain animals, including man. Although typhus may always appear, Rocky Mountain spotted fever is the important member of this group for New England. This disease, which occurs every summer in Virginia, Maryland and Pennsylvania, has recently been diagnosed in Rhode Island and southern Massachusetts.[80] The infection, like tularemia, is hereditarily transmitted in ticks and is contracted from contact with an infected tick. The disease is characterized by a high fever lasting about two weeks, a maculopapular or petechial rash particularly on the extremities, and stupor and irritability. Diagnosis is made by the development of a positive Weil-Felix reaction (agglutination of *Bacillus proteus* X 19) about ten days after onset or by the production of characteristic fever in a guinea pig after the intraperitoneal injection of 5 cc. of blood taken during the first week of the disease. As yet the disease is not common enough to justify any prophylactic measures except a healthy respect for ticks, although a vaccine of formalinized rickettsiae can be prepared. Sulfanilamide is useless in treatment.[81]

Equine encephalomyelitis is a severe epidemic disease of horses caused by a virus of which a number of immunologically distinct strains have been described. The disease attracted widespread attention last summer, because an epidemic among horses in southern Massachusetts[8] due to the Eastern strain of the virus was accompanied by a number of proved human cases,[83] characterized by a high mortality and severe sequelae. Human encephalitis due to the Western strain of the virus was also recognized last year.[84] Following the work of Kelser,[85] who transmitted the virus from horse to horse by the bites of *Aedes aegypti* mosquitoes, it was assumed that the disease spread among horses in this way. But the discovery of the virus in pigeons[86] and wild pheasants[87] has suggested that it may have its reservoir in wild birds, from which it is transmitted to horses and perhaps to man. Field proof of its transmission by the mosquito is lacking for this cycle.

Equine encephalomyelitis has provided the laboratory with an ideal virus for investigative work. It is pathogenic for a great number of small animals, and in the embryo chick the virus reaches a very high titer. This has enabled Beard, Finkelstein, Sealy and Wyckoff to produce a potent vaccine,[89] and they have already been able to obtain the virus in a comparatively pure state by differential centrifugation of the ground chick-embryo tissue.[88] This vaccine, produced primarily for the immunization of horses, is applicable to human beings, but unless the disease becomes much more prevalent than its past history would suggest there should be no call for its general use.

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Chester L Smart, Laconia
A Philip La France, Laconia
Francis J C Dube, Center Ossipee
Edgar J Thibodeau, Berlin
Leslie K Sycamore, Hanover
Deering G Smith, Nashua
George C Wilkins, Manchester
Clarence E Dunbar, Manchester
George V Fiske, Manchester
Henry O Smith, Hudson
Wendell P Clare, Portsmouth
John A Hunter, Dover

SPEAKER DYE We are ready to take up new business

DR COBURN We voted yesterday to formulate plans for the one hundred and fiftieth anniversary of the Society

I appoint the following committee for that purpose Henry O Smith, chairman, Fred E Clow and Carleton R Metcalf

DR. SMITH It has been suggested that the retiring president be a member of that committee I should like to make it a committee of five, with the vice-president elect added to the list, as well as the retiring president

This motion was seconded and was carried

SPEAKER DYE Is there further new business?

DR COBURN The Women's Auxiliary would like to have the sanction of the Society in their efforts to sell *Hygeia*

I move that the House of Delegates favor the project

This motion was seconded and was carried

SPEAKER DYE We will now have the report of the Nominating Committee

Report of Nominating Committee

OFFICERS

President James B Woodman, Robert W Holmes, John A Hunter

Vice President Ezra A Jones, Henry C Sanders, Jr, Ralph W Tuttle.

Councilors John J Brosnahan, Cheshire County, Emery M Fitch, Sullivan County

Trustee Henry O Smith

Speaker Fred Fernald

Vice-Speaker Robert O Blood

Delegate (American Medical Association) Deering G Smith

Alternate Delegate (American Medical Association) Emery M Fitch

Necrologist Henry H Amsden

COMMITTEES

Amendments to Constitution and By-laws Fred E Clow, Philip McQuesten, Louis W Flanders

Control of Cancer George C Wilkins, Howard N Kingsford, George F Dwinell

Medical Economics Leslie K Sycamore, Richard W Robinson, Clarence E Dunbar

Medical Education and Hospitals John P Bowler, James W Jameson, Herbert L. Taylor

Mental and Social Hygiene Charles H Dolloff, Benjamin W Baker, John B McKenna

Public Relations President, Vice President, Secretary Treasurer, Robert J Graves, John F Holmes

Publication Carleton R Metcalf, Warren H Butterfield, Ellsworth M Tracy

Scientific Work Carleton R. Metcalf, Frederick P Scribner, Nathan T Milliken

Tuberculosis Robert B Kerr, Robert M Deming, John D Spring

Advisory Committee on Medical Relief Robert J Graves, John P Bowler, Roland J Joyce.

Child Health Colin C Stewart, Jr, Travis P Burroughs, Franklin N Rogers

Maternity and Infancy Robert O Blood, Benjamin P Burpee, Marion Fairfield

SPEAKER DYE You will vote by ballot for president.

Voting by ballot for the office of president then took place

DR DUNBAR The total number of votes cast was 15, all for James B Woodman

SPEAKER DYE Dr Woodman has just been unanimously elected president of the Society for the coming year

You will now vote by ballot for vice-president.

Voting by ballot for the office of vice-president then took place

DR DUNBAR The total number of votes cast was 16, Dr Sanders received 3, Dr Tuttle 4, and Dr Jones 9

SPEAKER DYE Dr Jones has been elected vice president of the Society for the coming year

You have heard the further report of the Nominating Committee What is your pleasure?

DR DUBE I move that the Secretary cast one ballot for the remainder of the slate

This motion was seconded and was carried

SECRETARY METCALF I move that we express our gratitude to the Manchester medical group for the work which they have done this year and the courtesy they have shown in inviting us to come again

This motion was seconded and was carried

DR CLARE I move that we adjourn

This motion was seconded and was carried

Whereupon, the 1939 meeting of the House of Delegates was adjourned at 9 15

CASE RECORDS OF THE MASSACHUSETTS GENERAL HOSPITAL

Antemortem and Postmortem Records as Used in Weekly Clinicopathological Exercises

founded by richard c. cabot m.d.

Tracy B Mallory, M.D., *Editor*

CASE 25351

Presentation of Case

A twenty nine year-old white married Italian woman was admitted complaining of amenorrhea and hirsutism

At the age of eighteen years the patient noted a sudden cessation of menses following a thirty day period of almost constant flow The amenorrhea lasted until the time of admission Her menstruation began at the age of thirteen years and was normal and regular until the age of eighteen She continued to have slight cramps and a warm feeling" at the time of the expected period up until the time of entry There were no further complaints until two years prior to admission She was married four years after the onset of the amenorrhea Two years before entry she began developing a beard followed by the growth of hair on the chest arms, legs and abdomen Five months before admission she began to notice the loss of hair from the scalp and a receding hairline on the forehead There were no pigment changes in the skin no striae and no unusual change in the size of the abdomen As a young girl she weighed 100 pounds, at the time of marriage 140 pounds, one year before admission 170 pounds. She then dieted and reduced to 140 pounds in two months On entry she weighed 146 pounds Since childhood she had had a fainting spell once every few months but these were never related to her catamenia Following one of these three months before entry she saw a physician who referred her to the Out Patient Department A sugar tolerance test two months before entry showed the following curve 67, 129, 127, 118 98 and 50 mg per 100 cc. Plain x ray films of the abdomen and skull showed no visible abnormality There had been no loss of libido and no personality change. No voice changes were noted She had not had headaches but had noticed blurring of vision after reading for a while

She had been constipated most of her life and used mild cathartics almost daily On two occasions in the past year she had noticed red blood in the stools which she thought came from hemorrhoids. There were no urinary symptoms She had not been pregnant At the age of eighteen years, shortly after the onset of the amenorrhea an abdominal operation was performed which revealed no cause for the condition She was told that she had an acute appendix Following this she had two subcutaneous injections weekly for a year without result. She had eleven brothers and sisters all of whom were normal except one obese sister aged twenty five years who had never menstruated but showed no evidence of hirsutism

Physical examination showed marked hirsutism with frontal alopecia and long dark hair over the chin trunk arms and legs The skin and mucous membranes were normal The patient had a contralto voice Examination of the eyes was negative The thyroid was negative The breasts were atrophic and masculine in type The heart and lungs were negative The blood pressure was 90 systolic, 60 diastolic. The abdomen was negative. The clitoris was moderately enlarged The vagina was essentially normal The cervix was negative except for a few small cysts The uterus was of normal size and freely movable. In the left vault the ovary was palpable and apparently contained a 1.5-cm rounded nodule There seemed to be some induration in the right uterosacral ligament

The urine examination was negative except for an occasional red or white cell The blood showed a red-cell count of 5 100 000 with 100 per cent hemoglobin and a white-cell count of 12,000 with 80 per cent polymorphonuclears. A blood Hinton test was negative The total serum cholesterol was 166 mg per cent Two androgen assays on twenty four hour specimens of urine yielded values of 8.5 and 6.3 mg (method of Callow)

On the fifth hospital day an operation was performed

Differential Diagnosis

Dr. Charles H Lawrence * This story puts us at once in doubtful territory because the causes of masculinization are many and there are some marked cases of hirsutism for which we can find no adequate explanation I think we must assume that the patient s amenorrhea and hirsutism were due to a common factor, though it is possible, but highly improbable, that they may have been due to different factors It was a permanent amenorrhea

In discussing the possible causes of this condition, there is no series of cases of hirsutism or amenorrhea large enough to give us any very definite statistical background It is interesting that in one group that of the adrenal tumors, the majority of the patients begin to menstruate at an early age between ten and eleven This patient began at thirteen, a perfectly normal age. She

* Assistant professor of medicine Tufts College Medical School and chief of Medicine Clinic Boston University

had no complaints until two years before she came in "Two years before entry she began to develop a beard followed by the growth of hair on the chest, arms, legs and abdomen" That apparently means there was some endocrine disturbance at that time

Women with such growth of hair are a serious problem because the condition creates a profound psychologic trauma I know one case where the patient committed suicide because of the development of a marked beard These patients want something done right away One has to be careful not to be overcome by the patient's anxiety for immediate therapy and jump at a conclusion without sufficient evidence

Starting with the symptom hirsutism there are two large groups, one with associated endocrine disturbance and another in which so far we have been unable to find any endocrine dysfunction There are four endocrinopathies which develop hirsutism, and often changes of secondary sex characteristics are associated arrhenoblastoma, tumor of the adrenal cortex, the so-called Cushing's disease, and the "oat-cell" tumor of the thymus I have never seen a case of "oat-cell" tumor, and they are very scarce in the literature All these masculinizing endocrinopathies are scarce of course, but the thymic type is the least common of all In reading the various accounts of these patients in the literature and looking for any straw that might tell the direction of the wind, I have been struck by the fact that loss of hair and receding hairline are more frequently reported in patients said to have arrhenoblastoma, than they are in those with Cushing's syndrome or tumors of the adrenal cortex In this history we note the statement "Five months before admission she began to notice the loss of hair from the scalp and a receding hairline on the forehead"

There was no pigment change in the skin All of us have in the back of our minds the association of pigmentation of the skin with disease of the adrenal glands, but one can see either Addison's disease or tumor of the adrenal cortex without pigmentation, so that this does not help one way or another

There were no striae I should say that would be rather against the idea that this was a case of Cushing's disease, but not entirely, because in the subsequent history a possible explanation occurs and that is that she had gained a lot of weight and then lost it She gained from 100 pounds as a girl and 140 at the time of her marriage—it is an interesting psychological problem that every woman "weighs in" at marriage—to 170 and then reduced to 140, she weighed 146 pounds when she came in In other words, she gained some 70 pounds over her weight as a girl and 30 over what she weighed at marriage and then succeeded in getting rid of most of it The weight of Cushing's disease is hard to reduce by diet

We come now to the blood sugar curve It and the fainting suggest the possibility of hypoglycemic attacks, but I do not believe one can prove them The sugar-tolerance fasting level was 67 mg, with a peak of 129 and a final figure of 50 The last is certainly a low figure, and if it went to 50 mg on that test it may have been lower at other times and may have accounted for the fainting attacks, but that is pure speculation The curve is important, however, because in the majority of patients with Cushing's basophilism the curve is reversed and takes the character of the so-called diabetic curve So this is a definite piece of evidence against Cushing's disease

"There had been no loss of libido" I do not know whether we can rely on that, but again it fits better with arrhenoblastoma than with Cushing's disease The patients with Cushing's disease that I have known have had definite loss of libido.

The blurring of vision suggests something wrong in the skull, but it is nothing more than suggestive

"On two occasions in the past year she had noticed red blood in the stools which she thought came from hemorrhoids" I should be inclined to agree with her In a young woman such bleeding might be perfectly well accounted for by hemorrhoids, and it seems to me we have no reason for indulging our imaginations and speculating about malignant disease of the ovaries that had spread to the rectum or something of that sort.

The fact that eleven years ago the abdomen was opened and nothing found does not necessarily mean there was nothing there because these masculinizing tumors can be extremely small and yet exert profound effects on sex characteristics. If the tumor happens to be in the cortex of an adrenal gland I am sure it would be impossible to rule it out by transperitoneal palpation

In the family history we find that she had eleven brothers and sisters who were normal and one sister aged twenty-five who was obese and who had never menstruated There is slight evidence that in this particular family perhaps endocrine dysfunction was in the inheritance, and that is all you can say about it

"The skin and mucous membranes were normal" If that is true it is quite valuable evidence against Cushing's disease, because one of the striking findings in this disease is the almost

constant rounding of the face and reddening of the skin so that the patient suggests a full moon rising in the evening of a hot day in summer The features are plethoric, the face very round, and the skin is a deep red and looks as if when pricked with a needle the blood would spurt.

"The patient had a contralto voice. I am not sure if the examiner was hedging or not. The characteristic voice change in adrenal cortex hyperfunction is a change to the masculine voice It is not a question of soprano or contralto, but one of whether it is base or baritone The quality of the voice is different, not just the pitch, so I think we must say that she did not have masculinization of the voice.

"The breasts were atrophic and masculine in type." That is definite masculinization, and peculiarly enough I think atrophy of the breast has been reported more often with arrhenoblastoma than in Cushing's disease, but not more often than with adenomas of the adrenal cortex

The blood pressure was 90 systolic 60 diastolic. Certainly there was no hypertension, but there have been a number of patients reported with adrenal cortex tumor who never developed hypertension

"The clitoris was moderately enlarged" We again have evidence of masculinization So we have besides the hirsutism, two important physical signs of masculinization, the atrophied breasts and the hypertrophied clitoris We might jump off the deep end and say that this was an arrhenoblastoma, but I do not want to jump

"In the left vault the ovary was palpable and apparently contained a 1.5-cm rounded nodule." It is rather intriguing to suggest that we have malignancy of the ovary here and some involvement of the uterosacral ligament but I think we are not quite justified in making that a hard and fast conclusion

The red-cell count is higher certainly than the normal average among women and of course one of the characteristic findings of Cushing's disease is an increase in the red-cell count and hemoglobin This again sways us over to the possibility of a Cushing tumor

There was no significant increase in the androgen In the last patient with adrenal tumor that I had, we measured the hormone by the capon unit and it was about ten times the normal male level There was no question about it—you could tell which bird was the injected and which the control across a large room On the other hand one sees masculinization associated both with adrenal tumor and with arrhenoblastoma without increase in male sex hormone I think the level of hormone production must fluctuate from time to time.

There is one thing that I should like very much to know It is not given here, that is, whether the bones, particularly the spine, showed demineralization

Dr. Felix Fleischner None of the bones showed evidence of decalcification.

Dr. Lawrence One of the outstanding features in Cushing's disease is kyphosis of the spine, which comes on early and is due to decalcification.

Where then do we stand? The oat-cell" tumor of the thymus I am going to throw out on the basis of its extreme rarity The lack of characteristic changes in appearance the lack of hypertension the lack of demineralization and the lack of any spinal kyphosis make me think that Cushing's disease is the least probable of the remaining three possibilities and that this girl probably had either an adrenal cortical tumor or an arrhenoblastoma The character of the hair loss on the head the lack of high blood pressure despite years of symptoms and the lack of loss of libido incline me to think that this was more probably arrhenoblastoma than it was a tumor of the adrenal cortex.

Dr Fuller Albright I think if the person who prepared the clinical abstract had seen the patient a few other points would have been emphasized She had marked virilism aside from the hirsutism—notably broad shoulders and a quite large clitoris In Cushing's disease you never get real virilism rather hirsutism without other evidence of virilism That is also true of some adrenal tumors—those associated with Cushing's disease. The absence of a decreased sugar tolerance was strong evidence against an adrenal tumor The differential I considered was between arrhenoblastoma and nothing and I rather favored nothing We see in the Out Patient Department many women with hirsutism and somewhat large clitorises in whom nothing is found at operation in fact that is our usual experience. The amenorrhea of course, was suggestive of arrhenoblastoma We were disappointed to find that the sterone assays were normal and I think they were correct I know of nothing in the literature on any other assays in arrhenoblastoma cases

Dr Joe V Meigs Our preoperative diagnosis was arrhenoblastoma At operation both ovaries were found to be abnormal but the right one contained a sizable tumor This ovary was removed in toto and a small tumor which proved to be a simple fibroma was resected from the left ovary

Clinical Diagnosis

Arrhenoblastoma of the ovary

Dr Lawrence's Diagnosis

Arrhenoblastoma of the ovary

Anatomical Diagnosis

Arrhenoblastoma (adenoma tubulare testiculare type) of the ovary

Pathological Discussion

Dr Benjamin Castleman Except for a thin rim of normal ovarian tissue, the right ovary was composed of a firm yellowish tumor measuring 5 by 3 by 3 cm Grossly it resembled the so-called xanthofibroma of the ovary Histologically the tumor consisted of well-formed tubules quite characteristic of the adenoma tubulare testiculare, first described by Pick[1] in 1905 and now believed to be the most differentiated type of arrhenoblastoma Readily recognizable on purely histological grounds, these tumors do not necessarily produce masculinization

With a fat stain, however, we were able to find the so-called Leydig or interstitial cells that apparently produce the male hormone and which should be present in active arrhenoblastomas The correlation of morphology and physiology in these ovarian tumors is intriguing but often unsatisfactory Meyer[2] and Schiller[3] have encouraged us to believe that such correlation is usually possible Norris,[4] on the other hand, suggests that the term arrhenoblastoma being derived from "arrhenos" meaning male, should be used only for those tumors with masculinizing effects, that is, it should be a physiological not a morphological diagnosis Our own experience in the field is limited We have seen masculinization relieved by oophorectomy where the ovarian tumor failed entirely to show the characteristic picture of arrhenoblastoma described by Meyer We have also seen morphologically typical arrhenoblastomas without masculinization

The small fibroma removed from the other ovary showed no unusual features and was merely incidental

Dr Albright It is interesting that, in spite of the fact that we did not get an excess of sterone or male hormone, one month after the operation she had a menstrual period and has had regular periods since

Dr Meigs How about the hirsutism?

Dr Albright She said that before operation it was progressively getting worse but that now it has failed to change She also has developed pain in the breasts and has lost weight

Dr Meigs Is it not possible that some of these tumors have periods when they are active and produce symptomatic effects and others when they are quiescent?

Dr Albright The ovary had not ceased function here because it produced amenorrhea, and as soon as the tumor was removed, her menses returned

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CASE 25352

Presentation of Case

First Admission A seventy-seven-year-old man was admitted complaining of urinary retention

For many years before admission the patient suffered from gradually progressing frequency of urination, cloudy urine and increasing difficulty in emptying the bladder There had been no hematuria or other symptoms referable to the genitourinary system Also for many years he had had attacks of precordial pain with exertion

Physical examination revealed a well appearing man The tongue was clean, and the chest clear The heart was slightly enlarged with a moderate apical systolic murmur, a regular pulse of 84, and a blood pressure of 180 systolic, 80 diastolic. Examination of the abdomen was negative except for the presence of a moderately sized right inguinal hernia and a small left hydrocele The right and left testes were normal in size and consistence Rectal examination revealed a moderately large, soft symmetrical prostate The residual urine was 500 cc

The urine examinations showed a specific gravity which ranged from 1 004 to 1 016, with + to ++ albumin and a sediment containing 1 to 25 red cells and 25 to 150 white cells per high power field The blood showed a red-cell count of 4,400,000 with 75 per cent hemoglobin, and a white cell count of 11,000 with 88 per cent polymorphonuclears Urine cultures showed *Bacillus pyocyaneus* and *Bacillus coli*

A flat abdominal x-ray film showed no evidence of stone There were proliferative changes about the margins of the bodies of the vertebrae The walls of the pelvic arteries showed considerable calcification, and the bones of the pelvis were very irregular at the site of muscle attachments An intravenous pyelogram showed incomplete filling on both sides and there was little dye seen in the bladder although the patient was under observation for forty-five minutes The pelves were not dilated and the ureters, so far as could be made out, appeared normal A cystogram showed the wall of

e bladder to be very irregular, with the presence diverticula and incomplete emptying of the gan.

The temperature was 99.6°F., the pulse 62, and e respirations 18

A transurethral prostatic resection was performed he was deferens on each side was cut and ligated fore operation Two moderately sized diverticula ere observed in the bladder He had an unevent l postoperative hospital stay and was discharged i the twenty third day

Second Admission (two years and seven months ter) Following the transurethral resection the tient was well. His cardiac symptoms improved nsiderably, and he led an active life. Three onths before entry he noted that there was some velling on the right side of the scrotum This was pped by a physician and an ounce of clear straw olored fluid withdrawn Shortly after this he oted that the right testicle was sore and distinctly vollen.

On physical examination the right testicle felt mewhat irregular and was twice its normal size. lood and urine studies were unchanged from the rst admission.

The temperature, pulse and respirations were ormal A chest x ray plate was essentially nega ive. A prolan A test was positive.

On the second hospital day an operation was erformed

Differential Diagnosis

Dr. J Dellinger Barney The first admission rovides a fairly typical history of urinary obstruc ion, probably a prostatic obstruction The his ory of precordial pain strongly suggests angina al hough it may possibly have been something else.

This man of seventy-seven presented not an un ommon set of physical findings. He had mod rate hypertension. Inguinal hernia is not uncom mon in individuals with extensive urinary obstruc ion, whether prostatic or due to stricture of the urethra Also a small hydrocele is not uncommon in people of that age, but in view of what follows it is important. It states, The right and left testes were normal in size and consistence" They do not make it clear whether they mean the testes and epididymes or the testes alone

Examination of the prostate showed a benign type of adenomatous hypertrophy The result of the urine examination is what you not infrequently see in a patient with prostatic obstruction, or for that matter in any form of urinary obstruction, namely a few red cells and quite a few white cells, in other words, evidence of infection The blood apparently was normal The cultures, in my experience were quite unusual *Bacillus pyocyaneus* may have been contamination the colon bacillus, of course, is the usual finding

Proliferative changes of the spine are common in a man of seventy seven and are usually due to hypertrophic arthritis The findings in the pelvic arteries are not uncommon, in fact they are very common if a patient has arteriosclerosis The in complete filling of the pelvis shows that there was poor renal function We are not enlightened as to the blood non protein nitrogen or the phthalein test of kidney function, but the intravenous pyelogram is in itself a good test for kidney function and apparently shows a low kidney function at that particular time The bladder on cystogram undoubtedly showed very extensive and fairly marked trabeculation, probably with sacculation and diverticulation all of which goes with long standing back pressure.

The temperature, pulse and respirations were not remarkable

The division and ligation of the vas deferens is practically a routine procedure The diverticula you might say are unimportant very rarely do they cause much trouble especially when the bladder is not opened A transurethral prostatectomy was done, and he apparently made a good convalescence

The improvement of cardiac symptoms may have been due to less activity, although it is said that he continued to lead an active life. He had a fairly long rest in bed and perhaps received other treatment for the anginal condition

"Three months before entry he noted that there was some swelling on the right side of the scrotum" Remember on that side he had a hernia and the testicle was normal The onset of this swelling was apparently not an acute affair but more or less gradual There is no mention of pain or tenderness There is no history of trauma The tapping of the scrotum by a physician with the withdrawal of an ounce of fluid might mean that he did not get it all There were perhaps several ounces It is difficult to tap a scrotum with only an ounce of fluid without doing damage to the testicle. Even in experienced hands it is difficult. The layer of fluid between the testicle and the hydrocele sac is very thin, and the needle can easily damage the testicle. Shortly after that he noticed that the testicle was sore and definitely swollen

Apparently there is no question that the right scrotum was enlarged in fact the testicle was about twice normal size It apparently felt irregular a finding which suggests that the swelling was not merely an accumulation of fluid in the tunica but a mass either in the testis or the epididymis

DR TRACY B MALLORY Perhaps you can help with that description, Dr Colby?

DR FLETCHER H COLBY The enlargement was definitely one of the testis

DR BARNEY Dr Colby says it was a swelling of the testicle itself, which is distinctly helpful After all the interesting and important feature of this case is the second admission He was getting along all right until three months before he came in and then noticed that the right scrotum was swollen It was tapped and one ounce of fluid withdrawn Shortly after that testicular swelling was noted Various things occur to one as possibilities One has to consider very seriously the idea of hematocele or hematoma, a collection of blood due to tapping, for reasons I have just explained it is very easy even in experienced hands to damage the testicle when removing a small amount of hydrocele fluid He had no fever and no mention is made of any marked amount of pain, although the scrotum was quite tender when palpated right after the tapping That would practically eliminate any acute infection, such as a gonococcal infection, a *Bacillus coli* infection or one due to any other organism except the tubercle bacillus It is very rare indeed to get tuberculosis of the epididymis or testicle in a man of this age, however, it does occur, and I have seen it in men over eighty Also, it seems possible that some note would have been made of thickening of the epididymis or testicle at the time of the first operation Gumma would seem to be eliminated by the negative Hinton test So it is not likely that he had an infection

He had a hydrocele, because the doctor tapped it and got some hydrocele fluid It is well known that hydrocele will recur It may be that this swelling was due to a recurring hydrocele, these may increase in size quite rapidly, oftentimes without any reason that we can find A hydrocele sac might be irregular in shape and contour if it were constricted at some point

Of course we cannot get away from the idea of neoplasm He was not seen for two years and seven months following the first admission and during that time a neoplasm would have had time to develop Neoplasm in the testicle in a man of seventy, however, is uncommon, we see it chiefly in patients below fifty The fact that he had a positive prolan A is of some importance He had had a vasectomy, however, and I believe it is not uncommon to get a positive prolan A test after vasectomy and prostatectomy No mention is made of the number of prolan A units He might have developed a lymphoblastoma of the testicle This type of tumor is apt to develop rapidly late in life, and it could give this picture

We can rule out acute things such as torsio of the testicle or of the hydatid of Morgagn There was no pain or fever We have bee told that this enlargement was apparently th of the testicle, but palpation of the scrotum difficult at times It might have been the herni that had come down For the sake of being com plete, another possibility is spermatocele Such condition, however, usually appears in the upp pole of the epididymis

It seems to me that the best possibility is th he had a hematocele, with the tunica vaginal filled with blood clot, and as the next bet I shoul put in neoplasm of the testis, probably a lymph blastoma

DR COLBY If you knew that this mass had de initely increased in size in the last month, as had under my observation, would that make yo change your mind?

DR BARNEY You mean that the increase in siz followed the tapping?

DR COLBY No From the time the testicle wa first examined by me after it had been tappe until just before operation it very definitely gre larger

DR BARNEY Well in that case I would rearrang the order of my diagnoses I still would pu hydrocele or hematocele quite near the top

DR COLBY I operated on the patient not knowing what the diagnosis was and suspecting a ne plasm because of the feeling of the testicle and i consistence, which Dr Barney had no way o determining, and because I knew that this ma had very definitely increased in size during th previous month I did not know about the positiv prolan test until after operation, but I do no believe that it would have made any differen in making up my mind because the patient wa over seventy I do not know how common it for men as old as that to have a positive test, bu my impression is that it is not too common

The tumor was removed by ligating the cor and taking the testicle and right scrotal conten out en masse On section the testicle was perha two and a half times as large as a normal testicl

CLINICAL DIAGNOSIS

Neoplasm of testis?
Hematocele?

DR BARNEY'S DIAGNOSIS

Hematocele?
Neoplasm, probably lymphoblastoma?

ANATOMICAL DIAGNOSIS

Lymphoblastoma of the testis

Pathological Discussion

Dr. Mallory This testicle was of a rather unusual appearance. Dr Colby was unable to restrain his curiosity in the operating room and sliced it across himself It looked a good deal like tumor and yet not entirely like tumor One could still make out some slight traces of testicular architecture. He brought it over to us, and we could not make up our minds in gross what it was. When the sections came through it was obvious that it was a lymphoblastoma It was very characteristic, and I think there can be no doubt about the diagnosis. The patient has since been looked over very thoroughly for the possibility of any other focus of disease and nothing has been found At the present time it appears that the process was localized to the testicle

Dr. George G Smith A lymphoblastoma is the same as a lymphosarcoma?

Dr. Mallory Yes, we use the two terms more or less interchangeably to signify a tumor of which the type cell is a lymphocyte, in this case a rather undifferentiated lymphoblast.

Dr. Barney May I ask Dr Colby the preoperative diagnosis?

Dr Colby I was in doubt I thought your suggestion of hematocele was a good one. Dr Smith also saw the patient, and he felt more strongly than I did that this was neoplasm

Dr Smith I was very definitely of the opinion that the enlarged body that you could feel was the testicle itself I did a transillumination and saw just a little fluid around the testicle such a finding rules out hematoma quite well, and I could not figure out anything else that would account for the very definite enlargement of the testicle. He had not had fever or tenderness, which would rule out an inflammatory process. I thought tumor was the only thing it could be. I had the prolan A test done. It was not quantitative, and I think it had no value.

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THE NEW FOOD, DRUG AND COSMETIC LEGISLATION

Law and Contemporary Problems, published by the School of Law of Duke University at Durham, North Carolina, devoted one hundred and seventy-eight pages in its last Winter Number to the above general title, with authoritative papers by such authors as David P Cavers, professor in Duke University School of Law, Ralph F Fuchs, professor in Washington University School of Law, Frederic P Lee, professor in Georgetown University Law School, Milton Handler, associate professor in Columbia University School of Law, James F Hoge, of New York City, counsel for the Proprietary Association, Robert W Austin, member of the Committee on Federal Legislation of the New York State Bar Association, Louise G Baldwin, first vice-president in charge of legislation, National League of Women Voters, Florence Kirlin, congressional secretary, National League of Women Voters, Saul Nelson, senior economist, Bureau of Labor Statistics, United States Department of Labor, and Ole Salthe, consultant to the Food and Drug Administration, United States Department of Agriculture Authoritatively they have discussed such subjects as the legislative history and substantive provisions of the act of 1938, formulation and review of regulation, enforcement provision of the act, control of false advertising, appraisal from the point of view of the drug and cosmetic industries, the legislation and the food industry, a consumer's appraisal, and representation of consumers' interest in federal and state legislation and its administration

In these discussions there is general agreement that the 1938 legislation with admitted defects represents a great advance in the control of foods, drugs and cosmetics in the interest of the consumers of them and that the control of their advertisement is the portion of the legislation seemingly least satisfactory Says Professor Cavers "Putting the advertising issue to one side and resolving favorably such doubts as the procedural and regulatory provisions inspire, I am convinced that the new law represents a vast improvement over the old one"

Those most concerned in bettering the old legislation made a determined effort to place advertising under the Food and Drug Administration of the United States Department of Agriculture, but the manufacturers concerned succeeded in placing it under the Federal Trade Commission but not, however, without inserting important restrictive features, not wanted by the producer and advertising interests but needed if any improvement in advertising methods could be expected. Says Professor Cavers

> While I think the results which the Food and Drug Administration could have achieved, if it has been been vested with advertising control, may easily be exaggerated, that very fact renders me all the more pessimistic as to the possibility of Federal Trade Commission regulation, sanctioned as it is by penalties of little deterrent value and vested in a body whose record is far more distinguished in other branches of its

jurisdiction than in the control of food drug and cosmetic advertising

Associate Professor Milton Handler adds

> While the Wheeler–Lea Act represents a sincere attempt to stem the avalanche of false and misleading advertising it is no more than a first and unfortunately inadequate step in that direction. Unless but pressed by clarifying amendments broadening its prohibitions and implementing it with effective sanctions, it will not affect an abiding solution of the vexing problems of false and misleading advertising.

Consumer appraisal is expressed by Baldwin and Kirlin as follows

> Passage of a bill is not the end of citizen interest in it. It should be the beginning of a new responsibility for to be effective a law needs sound administration and active citizen co-operation. The potentialities of the law under consideration here will be fully realized only if the consumer and the enforcing agency take full advantage of it. A great deal of the protection afforded consumers is in the information that will be given them in label declarations. If consumers do not read labels and fail to make their selection of purchases on the information given there, much of the value of the law will be lost. Continuing interest in promulgation of regulations is also an important responsibility of the consumer
>
> The Food and Drug Administration views the law as essentially a measure to protect the public and can probably be counted upon to the extent of its capacity to interpret the law in those instances requiring amplification by regulation to the advantage of the consumer It has given remarkable service to the public in the past in spite of the handicaps of a deficient law and woefully inadequate appropriations If Congress fails to increase the appropriations available for enforcement commensurate with the increased responsibilities under the act, the consumer will be penalized.
>
> There are weaknesses in the law unquestionably How serious these are will only be determined after a period of enforcement. With the aroused interest of consumers it should be possible to secure perfecting amendments as need becomes evident.

These new laws are complicated, many of the requirements of the act went into effect prior to June 25, 1939, but a new bill extends the labeling provisions and those concerning coal tar colors to January 1, 1940, and the Secretary of Agriculture has been authorized to postpone the effective date of some of the other regulations until July 1 1940 Time will show defects and strong places, many legal decisions must come from the courts to make clear the intent and mechanism of numerous clauses in the new law In due season will come the time for probable changes in the legislation It tool five years and one day to get the present legislation through Congress

To quote further

> Perhaps the most striking characteristic of the history of the Food Drug and Cosmetic Act is the fact that this measure, which was of consequence to the health and pocketbook of every citizen of the country and which importantly affected industries whose annual produce totals roughly ten billion dollars never became the object of widespread public attention much less of informed public interest. The affected industries were kept posted by their associations and their journals some national women's organizations sought to apprise their membership of major developments but the public at large, including persons ordinarily well-informed on national affairs, knew little or nothing of what was transpiring in Congress. I suspect that today only a small fraction of the public knows that a new law has been enacted
>
> For the existence of this situation the nation's press must stand primarily accountable In the long history of the bill the *New York Times* seems to have seen fit to give it front-page mention on but a single occasion and then only to report a disturbance in the Senate galleries The *Times'* policy was not exceptional The only newspapers of consequence to give consistent support to the measure were the *St Louis Post–Dispatch* the *Christian Science Monitor* and William Allen White's *Emporia Gazette* Magazines of large circulation were silent or unfriendly an attitude contrasting sharply with their militant advocacy of the Act of 1906. That this policy was due in no small degree to the fact that the measure was widely represented as menacing to advertising revenues seems inescapable.
>
> The drive to restrict the power to make multiple seizures was led by the Proprietary Association. Especially prominent in this effort of the Association were representatives of the Vick Chemical Company of North Carolina but that company's objective was shared by many other large concerns, among them the Lambert Pharmacal Company of Missouri the maker of Listerine. It was perhaps not surprising therefore, that Senators Bailey of North Carolina and Clark of Missouri both members of the Committee on Commerce and able debaters should enter the lists on behalf of their industrial constituents to engage in the familiar and congenial task of combatting bureaucracy
>
> Undoubtedly there was at the outset a widespread if not universal preference among the affected industries for the Federal Trade Commission's continuation as supervisor of advertising. But as modifi

> cations were introduced into the food and drug bills' advertising provisions, more and more of the leading food and drug advertisers — and publishers as well — came to the conclusion that effective control of the black sheep of the industries could be had only through Food and Drug Administration action Possibly, therefore, the issue would not have been forced but for the vigilance of the Federal Trade Commission, which manifested a lively disinclination to see another governmental agency share its jurisdiction In industry ranks the Federal Trade Commission found potent support among the proprietary drug manufacturers, the Proprietary Association and its smaller brethren, the United Medicine Manufacturers of America and the Institute of Medicine Manufacturers, all worked in its behalf The principal congressional champions of the Federal Trade Commission were Senator Clark, of Missouri, and Chairman Clarence F Lea (California) of the House Committee on Interstate and Foreign Commerce.

Without Senator Copeland's persistence no reasonably satisfactory legislation probably could have been put through Unfortunately he did not live long after its passage to receive the deserved thanks of the people Representatives Chapman, of Kentucky, and Mapes, of Michigan, did yeoman service for this legislation toward the end Secretary Wallace and President Roosevelt were of great aid Women's organizations were active and effective supporters The unfortunate deaths from Elixir Sulfanilamide aroused widespread interest and helped toward the passage of needed legislation, in particular that related to the control of the distribution of new drugs until the safety of their administration has been proved Alas the medical profession did little to help, even so far as pure drugs were concerned, as shown by the following from Professor Cavers

> However, no appearance was made on behalf of the American Medical Association, its representatives merely filing a brief complaining of the rule making powers conferred on the Secretary [of Agriculture] Dr Woodward from the American Medical Association in his appearance denied a prevalent charge that the American Medical Association had written the bill or was a moving force behind it and then corroborated that statement by the tepidity of his support of the measure.

Individual physicians were found by the author of this editorial very willing to help by writing letters to senators and representatives, why organized medicine, as the American Medical Association likes to call itself, was so indifferent in support of legislation for pure foods, pure drugs and pure cosmetics is hard to understand

In the future, efforts will undoubtedly be made to weaken the legislation so far passed, and this must be guarded against, improvement in it may be required by amendments or new legislation Time will be needed for court decisions to clarify the enactments New principles of law seem involved in this legislation How well the Federal Trade Commission will function remains to be seen, its attitude will determine whether advertising of foods, drugs and cosmetics will come within needed bounds Here lies the greatest uncertainty as to this new legislation If it does not work, then the fight for more effective legislation *must be begun* If this becomes necessary, it is hoped that the medical profession, by organizational and individual effort, will band with the women to fight for still purer foods, drugs and cosmetics and for more honest and less harmful advertising of them in print and by radio Eventually these ends must be accomplished

MASSACHUSETTS MEDICAL SOCIETY

SECTION OF OBSTETRICS AND GYNECOLOGY*

RAYMOND S TITUS, M.D., *Secretary*
330 Dartmouth Street
Boston

INVERSION OF THE UTERUS

Mrs L P, a thirty-year-old woman, was admitted to the hospital three days post partum, February 5, 1931 Delivery of her fourth baby had been effected at another institution following an uneventful pregnancy and labor The placenta had failed to separate and manual removal had been attempted with resultant inversion of the uterus accompanied by severe hemorrhage Supportive therapy was instituted for three days and on the morning of admission unsuccessful attempts at replacement had been made The patient was then transferred for operation

The patient's family, past and recent systemic histories were noncontributory

On admission the patient was blanched and

*A series of selected case histories by members of the section will be published weekly Comments and questions by subscribers are solicited and will be discussed by members of the section

, with a pulse of 130 and a blood pressure 00 systolic, 80 diastolic. The temperature was F., and the respirations 20 The red-blood-cell t was 2,140,000 with a hemoglobin of 38 per

Examination disclosed a very foul necrotic, ted uterus, with an ecchymotic and edematous 1 and a perineum freshly lacerated to the anal icter

llowing a transfusion of 500 cc of citrated l, abdominal operation was undertaken under l novocain anesthesia. On entering the peri l cavity, a crater of the uterus presented, with ubes and ovaries drawn into it the ring was : 3 or 4 cm in circumference. The uterus reverted by clamping and traction, and a ysterectomy performed Iodoform gauze was to drain the pelvis through the vagina. The it stood the operation well and, following er transfusion of 500 cc. of citrated blood, eturned to bed in good condition

: first two postoperative days were unevent In the third day the iodoform gauze drain was ved, the patient was comfortable, and her al condition good On the fifth day the ood-cell count was 3,700 000, and the hemo- 1 60 per cent, on this day the patient de d slight chest pains and a cough On the h day the temperature reached 102° F., and ilse 130 On the ninth day foul pus was ex d from the abdominal wound through two ng sinuses. The stay sutures were removed, ocal irrigations begun By the tenth day nperature was normal and remained so The l cleaned up rapidly and the sinuses healed inulation so that on the eighteenth day the t was up and about and was discharged : next day in good condition At discharge d-cell count was 4 170 000 and the hemo- 68 per cent

oscopic examination of the placenta showed dence of a placenta accreta

ment The question of individual judg always enters into the treatment of an in 1 of the uterus that cannot be reduced The or undoubtedly felt in this case that the on of the uterus was such that the chance very was greater by hysterectomy than by eration devised to reduce the inversion and he uterus in situ There are no hard and fast ne can lay down as to when to do a hyster in these cases It is obvious that the inver hould have been reduced at the time of irrence.

postoperative course was complicated some y the pus in the abdominal wound this t serious, and the successful end result cer ustified the procedure

HAY FEVER AND ASTHMA*

There is nothing glamorous about a running nose or streaming eyes, and endless sneezing has never helped anyone make friends or influence people. But if you can say that your troubles are all due to allergy you are at least an object of interest to your acquaintances. The common or garden variety of cold makes boring conver sation. But a pretty case of allergy is always good for at least a small audience. And the more "tests" your doc tor has made to find out just what kind of allergy you have, the better your chance of being the life of the house party The only trouble is that so many people are talk ing about their allergies that soon your sensitiveness to peanuts or face powder will be as sensational a subject as last Tuesday's weather

In fact, some authorities claim that nearly half the hun dred and thirty million people in this country have, at one time or another shown sensitiveness to some sub stance. Certainly somewhere between one and sixty mil lion of them find ragweed as welcome as poison ivy and would rather meet Frankenstein in a dark alley than play with a puppy

What exactly are hay fever and asthma, and what in the world you may ask, is this allergy? Both hay fever and asthma are types of allergy And allergy is the name given to your body's strong dislike for certain things in the air — such as animal dusts or plant pollens, — foods — most commonly eggs, wheat or milk, — things you touch — such as poison ivy — or substances inside the body

These reactions of the body to offensive articles may take the form of sneezing coughing running nose, streaming eyes wheezing or a skin rash. When the body is sensitive only to dust, pollens or foods or to sub stances already within the system, such as germs, we call the disease hay fever or asthma, as the case may be.

We have not yet discovered why some people are sen sitive to certain things, and others not. But, we have at least made good progress in tracking down the kind of thing that makes life miserable for the hay fever and asthma sufferer as well as those of you with other types of allergy Grandpa may laugh himself into a stroke if you should suggest that removing his terrier from the house might relieve his asthma but we do know for a certainty that dogs, as well as cats, horses, cows, sheep and rabbits, explain many cases of allergy And Cousin Elmer might suggest having your head examined if you advised him to get rid of his feather-bed to stop his hay fever but you would still have the right idea. We know that dusts from kapok chicken duck and goose feathers, silk rugs curtains, overstuffed furniture and similar articles give people hay fever We know that plant and tree pollens are among the commonest offenders especially pollens from oak birch maple and elm trees, ragweed and grasses. Flaxseed and cottonseed are also trouble-makers. The kinds of food which aggravate allergic persons are numerous and varied wheat, oats, rice, rye, eggs, milk, beef lamb pork, sea food fish beans potatoes, spinach peanuts celery peas strawberries, oranges cantaloupes tomatoes, chicken mustard chocolate and cocoanuts.

One of the interesting facts about allergy is that you often inherit the tendency to be allergic. Indeed, we doc tors frown on a boy with hay fever marrying a girl who has asthma Their children are very likely to be perfect little examples of inherited allergy But since doctors always lose out in an argument with young love all they can do is warn allergic parents to be on the watch for food

*A "Green Light to Health" broadcast given by Dr. W ter S. Burr ge on Wednesday, June 21, and sponsored by the Public Education Committee of the Massachusetts Medical Society and the Massachusetts Department of Public Health

or other sensitivity in little Susie or Pete, and not to force spinach or the breakfast cereal if the child appears strongly to dislike it

Seasonal hay fever and pollen asthma, both of which are caused by pollens, have, like straw hats, a particular season Certain of the pollens which cause them, such as those from trees,—in New England the most common are oak, maple, birch, elm, and willow pollens,—are in the air during April and May Grass pollens, which cause so-called "rose fever," float about during June and the first half of July Ragweed, the chief cause of fall hay fever, fills the air from mid August to frost.

Unfortunately, the seasonal hay-fever sufferer with ragweed sensitivity, for instance, cannot end his troubles merely by going out and digging up all the ragweed in the garden Ragweed pollen can be carried by the wind for hundreds of miles and has been collected in airplanes thousands of feet above the earth And the escape method of cure works only if you can take an ocean voyage, and too few of us can afford this Many localities, especially in the mountains, have been advertised as hay-fever resorts, but actual pollen counts in these places have shown that there was little basis for such claims

What can you do, then, if you have seasonal hay fever or pollen asthma? First of all, expose yourself as little as possible to the offending dust or pollen by keeping your windows shut at night or installing some kind of filtering machine in your bedroom or office windows These filters cut down the amount of pollen about 95 per cent. But even so, relief is temporary and, at best, only partial. There are filters which can be inserted in the nose, and gas masks, but they are not practical

The most successful plan is to go to the doctor and have him build up your resistance to the harmful substance by giving you injections The doctor can, by listening to your story and making skin tests, usually find out the particular material that is causing the trouble. By injecting a solution of this material in gradually increasing amounts into your arm or leg, he may bring your resistance up to the point where it will cease to give you hay fever or asthma These injections can be given during or before the season, or right through the year Treatment during the season is least effective. Injections given before the season or all year round are best. Local treatment with sprays, salves and eyedrops gives only temporary and very slight relief

Asthma and hay fever often have no relation to the season but occur at any time of year or even persist throughout the year This type of allergy is caused by something in your surroundings—an animal, house dusts or foods—or by something wrong within your body, such as infection The farmer who is sensitive to cows, for example, will have his hay fever or asthma as long as he is near the animals The horse sensitive stableboy will have asthma or hay fever whenever he works with horses If you always sleep on a feather pillow, you will wheeze or sneeze the year round if you are allergic to feathers

A competent doctor can help you But you can help him, and yourself too, by doing a little preliminary investigating on your own account. If you think you have asthma or hay fever, begin right away to note the time, place and circumstances which seem to be related to your symptoms When and where do you appear to have trouble by day or night, indoors or outdoors, at home or where you work, everywhere in the house, or only in certain rooms, when the dog or cat is around, or even in places where there are no animals, when you eat lobster, let us say, or soft boiled eggs?

Observing yourself carefully in this way will save you time and trouble, and give the doctor a start in solving the mystery He will have to make tests in any case, but not so many as would be necessary if he must start from scratch and go through a list of several hundred possibilities And, best of all, if you, yourself, can find what is troubling you, you can, to some extent, treat yourself by trying to keep away from it.

One thing your doctor can do, that you cannot, is build up your resistance to the harmful substance by giving you injections And he can also help you keep away from the offensive substances, if keeping away from them is the treatment that is best for you

* * *

Q As you said yourself, allergy is still new enough and novel enough to cause a faint stir of interest around the tea table But surely people must have been allergic since time immemorial?

A Allergy is no older or younger than any other human ailment. In fact, as far back as 1798 doctors noticed things that suggested a peculiar capacity in some individuals to react toward certain substances harmless to others But only since the World War has any headway been made in successfully treating such patients. And right now, a great deal of work is being done on the subject by research workers

Q Has this study of allergy gone far enough to produce concrete results in the way of relief for such conditions as hay fever and asthma?

A It certainly has Statistics show that 80 per cent of hay fever patients are being helped, and over 50 per cent of those with asthma This is a very encouraging record, and one which should be improved even further as we find out more about what causes allergy

Q Are tests the only way a doctor has of finding out what is causing your running nose or sneezing?

A The history of the case is just as important as the tests By history I mean your own account of the nature of the attacks and the circumstances under which they occur The doctor is guided in his choice of tests and in his diagnosis by what you can tell him He has to know whether your symptoms occurred during the winter or summer, whether they were associated with colds, whether they were worse when you were at work or at home If you can tell him they were associated with colds, he has found a clue to the possible infectious nature of your difficulty If you know your hay fever first occurred in June, he immediately thinks of grass pollen or so-called "rose fever" If you were well until around Labor Day, he can proceed on the assumption that you are probably sensitive to ragweed What you can tell him about your environment is also of the greatest importance whether there is a dog or cat in the house, what types of bedding you use, whether you use face powder, or work in a bakeshop Bakers, for example, are often sensitive to wheat. These details may seem trivial, but they may actually lead to the correct diagnosis and successful treatment of your case.

Q Do tests prove anything definite?

A Tests are like things you read in the newspaper you cannot believe everything And an ounce of doubt is worth a pound of testing materials A positive test does not always mean you are sensitive to the material used in the test. On the other hand, a patient may be sensitive to a substance which, when used in a test, produces a negative reaction Any form of treatment based on the presence or absence of positive skin tests alone is

likely to be unsatisfactory and may even be harmful in that the patient's mode of living may be restricted beyond the bounds of common sense. In one case an overconscientious patient had reduced her diet to nothing but noodle soup, and another who on the basis of positive tests was avoiding certain foods, as well as silks would not eat away from home or go to the theatre, dances or any other public places where he would come in contact with silk. The results in this last case were unexpected—the patient developed a nervous breakdown from sheer inhibition.

Q. What would you say is the sensible approach to allergy?

A. A person who thinks he has allergy should first of all do something about it. Neglected hay fever can become asthma, and other forms of allergy can also develop into complicated illnesses. He should observe his symptoms, and if he cannot succeed in obtaining relief by cutting down his exposure to what he thinks is causing these symptoms he should go to a qualified doctor and put himself in experienced hands. The doctor by making sure the case is one of actual allergy by translating the story in the terms of scientific knowledge, by making the proper tests and interpreting them correctly can do a lot to put more sense in sensitivity.

DEATH

CHATIGNY.—BEATRICE A. CHATIGNY, M.D. of Taunton, died August 18. She was in her forty-ninth year.

Born in Boston she graduated from South Boston High School and received her degree from the Tufts College Medical School in 1913. Dr. Chatigny served her internship at the Massachusetts Homeopathic Hospital. For five years she served on the staff of the Taunton State Hospital and was on the staff of the Northampton State Hospital for one year.

She was a member of the Tufts College Medical School Honorary Medical Society, an honor bestowed last winter.

She is survived by her husband, Dr. Joseph V. Chatigny, treasurer of the Bristol North District Medical Society, two sons and a brother.

MISCELLANY

SECOND U.S.P. XI SUPPLEMENT

It has been learned that the *Second United States Pharmacopoeia XI Supplement* will be off the press in a few days, and stocks are to be shipped to the regular subagents throughout the country so that it may be released on September 1.

The *Second Supplement* includes new monographs for ascorbic acid, cyclopropane, mandelic acid, methyrosaniline chloride, nicotinic acid, purified cotton, soluble pentobarbital sulfanilamide, surgical gut or catgut, thiamine hydrochloride, tribasic calcium phosphate, tribasic magnesium phosphate, natural vitamin A in oil and natural vitamins A and D in oil, official for the first time. Two of these substances, tribasic calcium phosphate and methyrosaniline chloride were in *National Formulary VI* but these new U.S.P. standards now supersede the previous ones.

The *Second Supplement* also includes a revision of eighty-five of the monographs of the original *U.S.P. XI*, particularly the [illegible] of antipneumococcus serum, including the recognition for the first time of Types 2, 5, 7 and 8 under tetanus antitoxin, the use of animals other than the horse is permitted while under diphtheria toxoid the alum precipitated form is given official recognition. It also contains a new bioassay method for thiamine hydrochloride (vitamin B_1). Improved assays for vitamin A and vitamin D are also given.

An important feature is the cumulative index which lists all U.S.P. titles and indicates where the present official monograph now in force may be found. This index emphasizes the fact that the *U.S.P. XI* now consists of three volumes—the original *U.S.P. XI* which became official on June 1, 1936, the *First U.S.P. XI Supplement* official December 1, 1937 and the *Second U.S.P. XI Supplement* which will become official January 1, 1940.

In the new supplement the following exceptions are made for the revised monographs for cod liver oil and nondestearinated cod-liver oil and for the new monograph providing standards for surgical gut or catgut. These three texts do not become official until July 1, 1940, six months additional times being allowed for the adjustment of labels and existing stocks.

To insure prompt delivery of the supplements, orders should be sent, accompanied by a check or money order to the General Agent, The Mack Printing Company, Easton, Pennsylvania. The price of the *First U.S.P. XI Supplement* is $1.00 prepaid and for the *Second U.S.P. XI Supplement* which is considerably larger $1.50 prepaid. A substantial, spring-back cover, serving as a single binder for all U.S.P. supplements, is also available. The binder sells for $1.50.

CORRESPONDENCE

RESTORATION OF LICENSE

To the Editor.—This is to inform you that in accordance with the vote of the Board of Registration in Medicine, the license of Dr. David H. Shulman revoked on August 18, 1938, was restored to him on August 21, 1939.

STEPHEN RUSHMORE, M.D., *Secretary*,
Board of Registration in Medicine.

State House,
Boston.

NOTICES

REMOVALS

ROBERT T. MONROE, M.D., announces the removal of his office from 721 Huntington Avenue, Boston, to 270 Commonwealth Avenue, Boston.

EDMUND MYERS, M.D., announces his removal to 343 Second Avenue North, St. Petersburg, Florida.

SOCIETY MEETINGS AND CONFERENCES

CALENDAR OF BOSTON DISTRICT FOR THE WEEK BEGINNING MONDAY, SEPTEMBER 4

Tuesday, September 5
10 a.m.–12:30 p.m. Boston Dispensary, Out-Patient Department.

Friday, September 8
10 a.m.–1:30 p.m. Boston Dispensary, Out-Patient Department.

Saturday, September 9
10 a.m.–1 p.m. Staff round[illegible] of the Peter Bent Brigham Hospital. Conducted by Dr. Samuel A. [illegible].

*Open to the medical profession.

SEPTEMBER 5 — Dermatology and Syphilology Clinic Lawrence General Hospital Page 325 issue of August 24

SEPTEMBER 4–6 — Institute for the Consideration of the Blood and Blood Forming Organs Page 941 issue of June 1

SEPTEMBER 4–6 — Institute at University of Wisconsin Medical School Page 160 issue of July 27

SEPTEMBER 5–8 — American Congress of Physical Therapy Hotel Pennsylvania New York City Page 857 issue of May 18

SEPTEMBER 11–15 — American Congress on Obstetrics and Gynecology Page 938 issue of December 8

SEPTEMBER 14–16 — Biological Photographic Association Page 941 issue of June 1

SEPTEMBER 15–28 — Pan Pacific Surgical Association Page 863 issue of November 24

SEPTEMBER 29–30 — New England Surgical Society Beverly and Salem

OCTOBER 23–NOVEMBER 3 — New York Academy of Medicine Page 977, issue of June 8

FALL 1939 — Temperature Symposium Page 218 issue of February 2

DECEMBER 2 — American Board of Obstetrics and Gynecology Page 1019 issue of June 15

JANUARY 6 JUNE 8–11 1940 — American Board of Obstetrics and Gynecology Page 160 issue of July 27

MARCH 7–9 1940 — The New England Hospital Association Hotel Statler, Boston

MAY 14 1940 — Pharmacopoeial Convention. Page 894 issue of May 25

JUNE 7–9 1940 — American Board of Obstetrics and Gynecology Page 1019 issue of June 15

BOOKS RECEIVED FOR REVIEW

Diagnosis and Management of Diseases of the Biliary Tract R Franklin Carter, Carl H. Greene and John R Twiss 432 pp Philadelphia Lea & Febiger, 1939 $6 50

Treatment by Manipulation A G Timbrell Fisher 255 pp New York Paul B Hoeber, Inc., 1939 $3 75

Doctors, Nurses and Dickens Robert D Neely 153 pp Boston The Christopher Publishing House, 1939 $1 50

Medical Climatology Climatic and weather influences in health and disease Clarence A Mills 296 pp Springfield, Illinois and Baltimore Charles C Thomas, 1939 $4 50

L'Examen du Malade Guide clinique de l'etudiant et du medecin P Delmas, G Giraud, E Jeanbrau, E. Leenhardt, J Margarot, P Pages, V Riche, L Rimbaud, J Terracol, H Villard Second edition 365 pp Paris Masson et Cie, 1939 45 Fr fr

Tuberculosis and Social Conditions in England With special reference to young adults P D'Arcy Hart and G Payling Wright. 165 pp London National Association for the Prevention of Tuberculosis 1939 3s

Provoked Alimentary Hyperglycemia The mechanism of the tolerance test Joseph M Flint. 37 pp London, Ontario A B Macallum, 1939

The Effect of the Macallum–Laughton Duodenal Extract Upon Hypophyseal Diabetes Joseph M Flint and Louis Michaud 77 pp London, Ontario A B Macallum, 1939

Manual of the Diseases of the Eye For students and general practitioners Charles H. May Sixteenth edition 515 pp Baltimore William Wood & Co, 1939 $4 00

Otolaryngology in General Practice Lyman G Richards 352 pp New York The Macmillan Co, 1939 $6 00

Surgical Applied Anatomy Frederick Treves Tenth edition 748 pp Philadelphia Lea & Febiger, 1939 $4 50

A Textbook of Microbiology Kenneth L Burdon Second edition of *A Textbook of Bacteriology* 638 pp New York The Macmillan Co., 1939 $2 75

How to Counsel Students E G Williamson. 562 pp New York and London McGraw–Hill Book Co, Inc., 1939 $3 75

Teaching for Health Marguerite M Hussey 328 pp New York Prentice–Hall, Inc, 1939 $2.25

One Hundred Thousand Days of Illness Dorothy Ketcham 477 pp Ann Arbor Edwards Brothers, Inc. 1939 $2 10

Sleep and Wakefulness As alternating phases in the cycle of existence Nathaniel Kleitman 638 pp Chicago The University of Chicago Press, 1939 $5 00

Historical Directory of State Health Departments in the United States of America Robert G Paterson 68 pp Columbus The Ohio Public Health Association, 1939 $1 00

Epidemic Encephalitis Etiology, epidemiology, treatment Third report of the Matheson Commission. 492 pp New York Columbia University Press, 1939 $3 00

Treatment in General Practice The management of some major medical disorders Vol 1 and 2 695 pp Boston Little, Brown & Co, 1939 $7 50

John Howard (1726–1790), Hospital and Prison Reformer A bibliography Leona Baumgartner 79 pp Baltimore The Johns Hopkins Press, 1939 $1 00

BOOK REVIEWS

Zur Entdeckung der Insulinschocktherapie bei akuten Geisteskrankheiten, insbesondere bei der Schizophrenie Julius Schuster 90 pp Budapest Druckerei der Pester Lloyd–Gesellschaft, 1938 2 Pengö

In this small book, the author first gives a chronological survey of his studies in the shock treatment of psychoses. He shows that von Jauregg's experiments concerning the influence of injections of proteins and of pyocyaneus bacilli on non syphilitic psychoses were the starting point for his investigations In 1926 the author reported a new procedure for the treatment of acute mental disorders before the Royal Hungarian Medical Association in Budapest. This concerned the sedating effect of large doses of insulin, as well as the elimination of hallucinations and of various thought disturbances, which was brought about by the drug At that time he explained that the favorable change which he noticed in his patients was due to the condition of the brain as a whole, as well as that of the entire organism The author made detailed statements about treatment with insulin, claiming that the transformation of carbohydrates into fats and the changes involving the intermediary metabolism of the brain, conditioned by the insulin, also the compensation of the existing glycogen reserves by large intravenous doses of glucose, all had a decidedly curative effect. In addition, extensive histopathological investigations led him to believe that there were certain pathologic changes which suggested a morphological basis for schizophrenia.

The author then tries to prove that insulin shock treatment eliminates the pathologic disturbance which he suggested as the underlying cause of schizophrenia. For that purpose he first describes the basic biochemical facts of the insulin shock effect He discusses the significance of the phosphatides, of the effective substances of the pituitary gland, of the growth factor and of the cortex of the adrenals This is followed by abstracts from case records and finally is summarized as follows "Although we could not demonstrate primary changes in the thalamus and in the nodules of the vegetative nervous system of schizophrenics and although most authors regard the changes in the thalamus and in the vegetative nervous centers as secondary phenomena that depend on changes

a the cells of the brain cortex, It cannot be doubted that n cases of schizophrenia the extreme loss of weight the norexia and the extreme need of water as evidenced by olydipsia and polyphagia to a certain extent can be re- arded as cortical effects on the water center the salt cen- er and the sugar center On the basis of his observations he following conclusions are drawn "In cases of sudden onfusion and ameoba insulin therapy is of deciding significance since it shortens the course of the disease he restlessness of the patient ceases, his instinct for nutri on awakens and artificial nourishment becomes super uous the mental condition of the patient changes the onfusion rapidly disappears

The whole book appears to be a bid for priority in the eatment of the schizophrenias with large doses of insulin. cannot be recommended as an authoritative study on sulin-shock treatment, and does not contain any valid valuable information from a scientific or clinical point view

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andbook of Physiology and Biochemistry W D Hal liburton and R. J S McDowall. Thirty fifth edition. 973 pp Philadelphia P Blakiston s Sons & Co. Inc., 1937 $5.50

Since 1848 this handbook has merited new editions om time to time. It should be noted that the title of s book now includes "biochemistry The aim consistently has been to meet the needs of the medical dent preparing for examination. Description of meth- s has been restricted, except in those cases of later practical value or of educational importance in directing one's ention to the fundamentals of physiological knowledge. e textual material has been brought up to date in re d to the humoral transmission of nerve impulse, zymes, vitamins sex hormones lymph formation the uitary gland general metabolism and diet. A special ture of the book, is the consideration of how various gans co-operate in the interest of the whole organism. e book is well bound and written on good paper and facts are presented in a style that will appeal to dents and general practitioners of medicine.

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ndbook of the Vaccine Treatment of Chronic Rheumatic Diseases Oxford Medical Publications. H. Warren Crowe. Third edition. 95 pp New York Oxford University Press, 1939 $1.25

H. Warren Crowe is the director of the Charterhouse umatism Clinic in London. Evidently this clinic is fined to the treatment of chronic rheumatic diseases the principal treatment that they depend on is the use stock vaccines of streptococci and staphylococci which apparently employed for all types of arthritis. He gives ailed descriptions of the use of these vaccines and many reports.

his book is of value to anyone interested in studying ine treatment.

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dical Jurisprudence and Toxicology William D McNally 386 pp. Philadelphia and London W B. Saunders Co 1939 $3.75

his is a frank condensation of the author's larger k on toxicology The limitations in size of the book accountable as the author explains in his preface for elimination of many details for which the reader is re d to the larger volume. Of the total pages, 278 are n up to toxicology In 66 pages the high spots of the ect of medical jurisprudence are touched. The book of ssity is inadequate in both fields.

The Clinical Diagnosis of Swellings C. E. Corrigan 313 pp. Baltimore The Williams & Wilkins Co., 1939 $4.00

It is well established that men who have been rigorously trained in sailing vessels without the benefit of radio compasses and mechanical depth finders make the best masters of modern ships By the same token, the doctor who has been trained to rely on his five senses and frontal lobes in reaching a diagnosis without too much reliance on the x-ray and the laboratory is the best clinician. In this day of highly specialized mechanical chemical and electrical aids to diagnosis the ancient art of medicine has been somewhat neglected It is therefore, refreshing to encounter a volume such as this in which the diagnosis of swellings of every type in the body is considered solely from the point of view of their physical characteristics and in the light of deductive reasoning

The presentation is simple and straightforward and greatly enhanced by excellent diagrammatic drawings. The gross pathology of swellings is emphasized over their often less clear-cut microscopic characteristics At the end of each chapter a tribute is paid in thumbnail sketches to the men of the past whose names are frequently associated with the subject matter In reviewing the medical nomenclature of form the author notes that we have no term which clearly denotes the shape of a mass or swelling formed by the segment of a sphere. He happily suggests the term hypospherical for such a mass A large sebaceous cyst on the scalp might thus be described as hypospherical The chapter on ulcers is particularly noteworthy with an excellent description of the various forms of skin cancer

Most surgeons of experience would disagree with the statement in the chapter on enlarged lymphatic nodes that such nodes are invariably fixed to the surrounding tissues when they are the seat of metastatic cancer Also the author's assertion that testicles in any position abnormal or otherwise always retain their general shape when they become the seat of disease cannot be endorsed without qualification.

This book could be read with great profit by every second year or third-year medical student and should prove stimulating to the teacher or clinician who is interested in the art as well as the science of exact diagnosis.

Food and Health An introduction to the science of nutrition A. Barbara Callow Second edition 168 pp. Oxford The Clarendon Press, 1938 $1.75

Among the treatises now being placed before the profession and the public those dealing with the importance of nutrition in maintaining health are appearing in considerable numbers with the purpose of making recently acquired knowledge available for all who are disposed to take advantage of it. In this list the book by A. Barbara Callow takes high rank. Beginning with explanations of the physiologic chemistry of nutrition the reader is given explanations of the nature of the several essential elements which enter into the structure and promote the growth of the human body The digestive processes by which these elements are utilized are described and a chapter is devoted to the vitamins.

After laying down this scientific basis for the maintenance of a normal body the rest of the book is devoted to the relative importance of the different foods with qualitative and quantitative proportions to be used to maintain health and cure those diseases which result from deficiencies in one or more of the elements. To those people who are obliged to consider the economic prob-

lems of feeding a family, the seventh chapter will be found especially valuable.

Many tables give detailed information which will relieve the busy housewife of having to draw conclusions from more elaborate compositions The book is well written and devoid of confusing technical terms

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Rural Medicine Proceedings of the conference held at Cooperstown, New York, October 7 and 8, 1938 268 pp Springfield, Illinois and Baltimore Charles C Thomas, 1939 $3 50

Much of what we do not know can be found by study and observation under conditions far simpler than those obtaining where most of the scientific time and money is spent. Sir James Mackenzie felt this to be so when he moved from Harley Street to St. Andrews twenty years ago The personality behind the Conference on Rural Medicine held at Cooperstown in October, 1938, is not so plainly evident, but the reviewer suspects that another, more modest Mackenzie had something to do with it. Certainly the Mary Imogene Bassett Hospital, of which George M Mackenzie is physician-in-chief, has demonstrated the feasibility of a small hospital's serving as the focus for community health interests to a far greater degree than has been suggested heretofore. This is the greatest but by no means the only inspiring value of the present volume, which reports the papers and discussions of the Cooperstown conference.

The book divides itself into the following parts about one hundred pages dealing with rural morbidity, about forty pages on public-health and school health programs in rural areas, thirty pages on postgraduate medical education in rural areas, and approximately seventy pages dealing with the economics of rural medicine. There is appended a bibliography of rural medicine which lists two hundred and fifty odd publications

Experts in many of the fields covered have contributed to the proceedings The material is entertainingly illustrated and cast into the form of graphs and charts The book is well made and easy to read The outstanding feature, however, is the comprehensive approach to the problems of rural medicine. One wishes it might be given even a tithe of the publicity so freely spent on certain professional proclamations in the same domain during 1938

Chronic Arthritis Robert T Monroe. Edited by Henry A Christian. 84 pp New York, London and Toronto Oxford University Press, 1939 $2 00

The author presents a simple, practical, fairly brief description of chronic arthritis based on his experience with 267 cases of atrophic arthritis and 466 cases of hypertrophic arthritis The presentation is remarkable for its freedom from prejudice The book should be read by all who are wondering whether their patients have atrophic or hypertrophic arthritis and by those who propose to suggest a type of treatment with which they are not familiar Most medical interns would profit by reading the book in order to obtain a good general idea of the arthritic problem

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Syphilis and Its Accomplices in Mischief Society, the state and the physician George M Katsainos. 676 pp Athens, Greece Privately printed, 1939 $5 00

This work could, by a slight stretch of the imagination, be considered peculiarly characteristic of a particular spirit of these times because of its very thinly-veiled attack on the physician in his relation to the society among which he practices medicine The very title is not only an insinuation but a slur, and one not in the best taste.

It is very difficult to classify this book, it certainly can not profess to be a textbook for the physician nor can it have been intended to be entirely a source of information for the laity It is, rather, a compendium a compendium of philosophy, of a sort, Greek history, Greek mythology, a smattering of medical history, a defense of the intellectual superiority of the German race [*sic*], a touch of sympathy for the "martyrdom of Nicholas Romanoff," and an invective against the Church and Christianity It also contains several expressions of self-appraisal for the author's great industry and fortitude under the rebuffs of his contemporaries in the practice of medicine. It is a little difficult for this reviewer to accept such a work as the proper place for a description of an interview with Dr John T Bowen in the course of which the author was refused admission to serve at the Massachusetts General Hospital Nor does it seem to be the place for such a statement as, "this country has known just three presidents who governed it according to the constitution, Jefferson, Lincoln and Theodore Roosevelt, and one absolute dictator, Wilson" There is a fairly rich supply of translations from the Greek of ancient medical writings However, what are the exact sources? Are the translations the author's own?

There are a number of statements related to the subject of syphilis as a whole which, in the opinion of the reviewer, constitute a serious indictment of the value of this work when judged by modern standards To quote only a few gummata are capable of transmitting the disease "like the secondary lesions", "Hereditary syphilis may be transmitted in three ways 1 By double hereditary infection, at the moment [*sic*] of conception by the parents who are luetic and not under treatment. 2. By maternal trahsmission 3 By paternal transmission. ", "Their ravages [those by syphilis and gonorrhea] can be restrained if the state, by legalizing and ennobling prostitution will teach the citizens, first, how to protect themselves properly from these diseases and, next, how to treat themselves, if once affected by them" (In other words, he recommends restoring the erstwhile profession of prostitution to the former glories which once surrounded it in ancient history)

He says of secondary syphilis " the disease at this stage may be considered a light disease and therefore curable" Another very startling statement "One of the principal reasons for the early manifestations of paresis and tabes dorsalis is the lumbar puncture and the repeated injury and disturbance which is caused by it on the nervous system" He is apparently uncompromising in the opinion that the treatment for chronic syphilis must go on forever

Although this voluminous work contains many very enjoyable references to Plutarch, Sophocles, Aeschylus, Hippocrates, Thucydides and other old Greek masters, it is nevertheless an excessively verbose composition of a few challengeable ideas about the clinical development of syphilis The book is poorly printed and profusely interspersed with many typographical errors, some of which are unimportant and others very important. For instance, in describing the dose for salvarsan, he states that it ranges from "0 015 milligrams to 0 04 centigrams." The error here is only too obvious to those who use the drug. One very interesting contribution is a philological discussion of the proposal to substitute the term "syphilodogonus" for spirochete or treponeme.

Appended to this text is a reprint of a small book entitled *Marriage and Syphilis* The author tells an interesting story of adventures in his attempts to have this book published and to have it reviewed by the press. This book is afflicted by the same heavy impediments which encumber the larger work. It also suffers from a somewhat strabismic viewpoint of the relation of the medical profession to this disease. For instance, there is the passage "The tragedy becomes even worse if we remember that the cause of these evils [syphilis and gonorrhea] is often the physician and becomes more revolting when we consider that the physician never suffers any harm but, on the contrary is left free to bring about many more similar disasters for the sake of a sordid gain." And again, a startling statement "Woman as an imitator is generally capable of reproducing good work, but as a physician she is surely bankrupt and therefore she ought to be forbidden to enter the medical profession Shades of Susan Blackstone! His concluding definition of syphilis is an index of his general theme "a disease which the medical profession deceives and plunders and which cannot be defeated conquered and consequently exterminated."

This combined volume of two books should certainly not be read by anyone who is not properly qualified to be adequately critical.

The Student's Handbook of Surgical Operations Frederick Treves. Sixth edition, revised by Cecil P G Wakeley 563 pp New York Paul B. Hoeber Inc., 1939 $5 00

This is the sixth edition and twenty first reprinting of this deservedly popular handbook. With the shelves of libraries filled with treatises on surgery this book remains almost unique in confining itself only to the actual technical procedures of operations. At the time of its original writing, operations on the extremities and the periphery of the body in general constituted much more of surgery than they do today This is still reflected in the present edition. For example, much space is devoted to amputations. However, this section is admirably written. The consideration of the subsequent usefulness of the limb in relation to the site of amputation is very well emphasized Also much attention is paid to operations on the bones and joints in particular excisions of joints. Possibly a greater incidence of bone tuberculosis in the British Isles makes these procedures commoner than they are in this country The author of this edition has refrained himself from a discussion of operative indications in general but does list the conditions which present absolute and relative indications for operations on the sympathetic nervous system with many of these, American surgeons are likely to disagree.

The volume should continue to serve the useful purpose it has for the past forty years and undoubtedly will remain a companion piece to Treves's *Applied Anatomy* in the libraries of many surgeons.

The Control of the Circulation of the Blood R. J. S. McDowall With the assistance of G E. Malcomson and I McWhan. 619 pp. London New York and Toronto Longmans, Green & Co., 1938. $22.50.

This volume is an important contribution as a source and reference book for physiological and clinical observations on the control of the circulation. No original material is presented but reviews and criticisms of work that has been done in this large field are well presented. The author discusses the control of the blood vessels, the vasodilator mechanisms blood depots, the cerebral circulation the pulmonary circulation, the coronary circulation the cutaneous circulation, and the hepatic and renal circulations in the first eight chapters. Then he goes on in the remainder of the book with the resting heart rate, the cardio-inhibitory mechanism, cardiac acceleration, the action of adrenaline, the control of the secretion of adrenaline and the method of its study the action of carbon dioxide and acid-base equilibrium the effects of general anoxemia and high altitude, asphyxia the effects of changes of temperature, the effects of sleep and mental activity of exercise, of posture, of hemorrhage and of the pituitary the hypothalamus and the action of certain substances used in the investigation of the circulation such as choline and acetylcholine atropine, histamine and pancreatic extracts. There is an extensive carefully selected bibliography

This volume can be recommended as a useful reference book to anyone — physiologist, clinical investigator or practicing physician — who is working in the field of the control of the circulation.

Textbook of Medicine By various authors. Edited by J J Conybeare. Fourth edition. 1112 pp. Baltimore The Williams & Wilkins Co., 1939 $6 75

This is a good textbook of medicine, as evaluated by comparison with the standard work of Osler which still ranks highest in this field. It is written by various British authors, but its editor and largest contributor J J Conybeare, physician to Guy's Hospital London has attained a high degree of unity of style, marked by clarity and conciseness. It is thoroughly abreast with recent advances in medicine and novel features attractive to the practitioner are sections on psychological medicine, or psychiatry and on common diseases of the skin.

From the point of view of the art of bookmaking it is excellent, being smaller lighter and better bound than the majority of standard textbooks. It is a fourth edition and gives promise of many more to come.

You Can't Eat That! A manual and recipe book for those who suffer either acutely or mildly (and perhaps unconsciously) from food allergy Helen Morgan. 330 pp New York Harcourt, Brace & Co., 1939 $2.50.

In this book the author presents scientific facts associated with the practical application of experiments tending to show that the "millions" of victims of allergy may expect relief, in a large proportion of cases, if treated by physicians who are qualified to meet the complex problems involved.

The importance of allergic reactions is emphasized in the statement that "medical science admits that simple foods may incite explosions that vary from a rash to a fatality." It is said that when the cause of an attack is found it is not enough to tell the patient that the offending food must be avoided because substitutes must be included in the dietary of many cases in order to maintain adequate nutrition.

After an explanation of allergy in its many phases the reader is informed about its causes, and how the disease is diagnosed and treated with a very complete history of the gradual accumulation of knowledge relating to it. The remainder of the book is devoted to the foods which are blameworthy substitutes, methods of cooking and a voluminous list of recipes.

The book is well written, and the facts and opinions contained therein are presented in an interesting fashion. No better endorsement could be written than that presented in the foreword by Dr Walter C. Alvarez

A Textbook of Clinical Neurology With an introduction to the history of neurology Israel S Wechsler Fourth edition, revised 844 pp Philadelphia and London W B Saunders Co, 1939 $7 00

In twelve years since the first issue of this book four editions have been called for, a fact which speaks highly of its value as a textbook. In the present edition, there are a few changes made necessary by the major advances in neurology since the third edition in 1935 Unfortunately, the author has not sufficiently kept in touch with the growing literature of neurology, and the edition is not so thoroughly revised as one would expect. There are, moreover, numerous small errors in the book which should have been corrected by the fourth edition The most serious errors are those in relation to the dosage of drugs, in one case ten times the ordinary dose being recommended It is hoped that in future editions more attention will be paid to matters of this kind

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American Medicine Mobilizes James Rorty 358 pp New York W W Norton & Co, Inc, 1939 $3 00

This book should be read by all physicians who are interested in economic problems in medicine and who are not familiar with the existing facts before they begin to consider plans for the improvement of the distribution and excellence of medical care.

The author presents in a clear and precise manner the important factors which must be realized by anyone who tackles these problems He obviously is hostile to the attitude of organized medicine, as represented by the American Medical Association, and is perhaps rather bitter in his criticism of Dr Morris Fishbein On the other hand the data which he presents to substantiate his claims are convincing He brings out clearly the points which the reports of the Committee on the Costs of Medical Care and of the American Foundation, that of the Interdepartmental Committee to Co-ordinate Health and Welfare Activities at the National Health Conference and other surveys have established. He emphasizes that the existing fee-for-service system in the practice of medicine cannot continue unless some program to provide the fee is instituted, and states that some type of prepayment insurance other than cash indemnity insurance must be the answer He is appreciably less optimistic than the reviewer in regard to the possibility of voluntary prepayment insurance plans developing to meet the situation and asks, since there is no doubt that compulsory health insurance by government will eventually develop, why it should not be put into effect now

The author also brings out clearly what an indefinite line of demarcation exists between patent and so-called ethical proprietary medicines This point has troubled many physicians for years, and the power, or perhaps evil, that powerful drug interests can exert on organized medicine by their financial support is well emphasized in the book.

The Principles and Practice of Ophthalmic Surgery Edmund B Spaeth 835 pp Philadelphia Lea & Febiger, 1939 $10 00

This book is evidently the fruit of a tremendous amount of work The author not only has drawn on his own large surgical experience, but for the most part has presented the most important operations devised by others In such a comprehensive work the descriptions are often necessarily brief, but adequate for the purpose. There is an unusually thorough treatment of plastic surgery related to the eye, doubtless on account of the author s especial interest in the subject The chapters on retin separation give a comprehensive review of the subje from the standpoints of etiology and operative and pos operative treatment In general the reviewer believ that the author has stressed the best types of operation f various conditions One must, however, regret the di missal in a single sentence of the intracapsular extractio of cataracts as advocated by Verhoeff, that is, the com bined forceps and pressure extraction, where the lens grasped at the upper pole and brought out witho tumbling This operation has been done practically the exclusion of all others at the Massachusetts Eye an Ear Infirmary since about 1927, and the results as reporte by Grossman, Beach and others certainly compare f vorably with those of other methods

On the whole, the book admirably fulfills the long-fe need of an adequate, up-to-date text of ophthalmic su gery in English It is a book no one doing this type c surgery can afford to be without.

The Canned Food Reference Manual 242 pp New York American Can Co, 1939

The story leading up to the publication of the new *Canned Food Reference Manual,* recently compiled by th Nutrition Laboratory of the Research Department, of th American Can Company, is an intensely interesting one It was brought about through the realization that not only must reliable information on canned foods be made avail able to laymen but — equally important — more technica information on this great class of foods should be pro vided those professions which deal intimately with canned foods

Consequently, in 1935, the American Can Company inaugurated its present practice of issuing each month in the journals serving the medical, dental, nursing, dietetic and home economics professions, a factual release covering in technical vein some phase of canned food knowledge. The great demand for some type of publication which would bring all these releases together within one binding was met first by publication of *Facts About Commercially Canned Foods* in 1936, and later by issuance of *Nutritive Aspects of Canned Foods* in 1937 The present text has been prepared to amplify and extend, rather than to re place, the above prior publications

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Health for 7,500,000 People Annual report of the Department of Health, City of New York, for 1937 and a review of developments from 1934 to 1938 John L. Rice 390 pp New York Department of Health, City of New York, 1939

This is the annual report of the Department of Health of New York City, popularized by the inclusion of non-technical phraseology and by pictures in the best candid manner The reviewer found much information, as one always does in such reports The total permit fees collected by the department approach half a million dollars annually There was but one case of botulism reported for seven million people over a period of seven years, and but two cases of pellagra. There was no smallpox for a period of five years, 1933–1937, during which time there were twenty seven cases of leprosy So one might continue noting the quaint details of the largest city As usual the contributions of the public health nurses are outstanding The system of decentralized health units is now well established in New York City, and is being used at designated points for medical education The book is well bound

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CARCINOMA OF THE FALLOPIAN TUBE*

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CARCINOMA of the fallopian tube is commonly regarded as a rare disease. According to Sänger and Barth,[1] Orthmann in 1886 reviewed the 13 cases in the literature previous to that time, only to exclude them as representing metastatic disease from a primary source in the uterus or ovary. Thus he receives priority in reporting the first undoubted case of primary carcinoma of the tube. As the cases have been encountered in surgical practice or pathological laboratories they have found their way into the literature, accompanied by a review of the cases already recorded. The accumulation to an approximate total of 350 cases has been slow with a large number of authors contributing. Orthmann's original case in 1886 was followed by 17 cases collected by Sänger and Barth[1] in 1895. Peham[2] was able to collect 63 cases in 1902. Doran[3] carefully reviewed the 100 cases reported up to 1910. Lang[4] gathered 214 cases in 1926, of which 107 were from the German literature. This was increased in 1929 to 230 cases by Wharton and Krock[5] who also added 14 proved specimens, 5 of these from Johns Hopkins Hospital and the surrounding hospitals. Nürnberger[6] materially increased this number, reporting 301 cases from 1886 to 1931. To this number Robinson[7] in 1936 added 48 cases, bringing the total to 349 in the literature up to and including 1935. Since that time the reported cases have appeared almost entirely in foreign journals.

While the total has been slow in its accumulation it is of some interest to note that Kahn and Norris[8] observed in 1934 while reporting 2 cases in which the patients were the youngest (eighteen years old) so far encountered, that there had been a distinct increase in the incidence of the disease during the past decade. Until 1932 there were no recorded cases of primary carcinoma of the tube in the surgical or pathological files of the Massachusetts General Hospital. Since that time 6 proved specimens have been received. Possibly the reason for the apparent increased incidence is due, as Kahn and Norris[8] suggest, to the awakened consciousness of carcinoma among the medical profession. Certainly more surgical specimens are being presented to the pathologist for confirmation of the gross diagnosis. Two cases encountered within my surgical experience, with the knowledge of a third case, all in the space of one week, confirm the impression that while the disease is undoubtedly rare it is of the utmost importance to any surgeon interested in gynecological practice. For that reason 8 cases from the records of the Massachusetts General, Pondville and Vincent hospitals have been reviewed and confirmed and are here reported.

Despite the fact that an appreciable number of proved specimens of carcinoma of the fallopian tube have been reported the experience of any one individual is of necessity small. The incidence in the various hospital centers is roughly similar. Wharton and Krock[5] report 5 cases among 35 000 gynecological patients at Johns Hopkins Hospital. Gupta[9] in Calcutta found 1 specimen among 6000 patients with pelvic disease. Barrows[10] noted 3 cases among 30 000 patients on the gynecological wards at the Bellevue Hospital in New York City. Ansprich[11] encountered 1 case in 19 439 patients on the gynecological service at the University Hospital in Philadelphia. The frequency among tumors of the genital tract is approximately 0.5 per cent.

The important element in the consideration of carcinoma of the tube lies not in its rarity but in the fact that it represents the most malignant form not only of genital cancer but of cancer anywhere in the body. It is apparent from the literature that a substantial number of patients have had carcinoma of the fallopian tube. In view of the general experience that the survival rate is less than 4 per cent, it is also apparent that nearly all who have had the disease succumbed to it. Despite the many reports in the literature, diagnostic errors made pre

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operatively are about as frequent as they were twenty years ago Inasmuch as the chance of cure varies directly with the stage of the disease encountered, it is obvious that there can be no improvement in prognosis until an earlier diagnosis is made From a consideration of the 8 cases here reported and the data in the literature certain observations may be made which, if considered, may lead at least to suspicion of the correct diagnosis Dannreuther's[12] experience confirms our own, and the possibility of making a correct and early preoperative diagnosis gives increasing hope for a more favorable outcome

There are certain factors which contribute to the likelihood of error in diagnosis The chief of these, of course, is that because of the rarity of the disease it is almost never considered as a possibility Furthermore, because of its location, direct observation, such as is possible in the breast, is out of the question Carcinoma of the stomach, which gives a total salvage figure similar to that of carcinoma of the tube, may be diagnosed by x-ray study, but x-ray examination of the pelvis for soft-part tumor is inconclusive Consequently the chief reliance is on consideration of the symptomatology and the physical findings Here also there are pitfalls, for disturbances of function are too often attributed to the menopause The vague, inconstant symptoms of lower abdominal soreness or pain may be associated with a variety of pelvic diseases Not much attention is paid to the symptoms either by the patient or her physician, although many have consulted their physicians because of it Most often it has been ignored unless accompanied by a recently noted enlargement of the abdomen or sudden appearance of bleeding Where pelvic examination has followed the report of lower abdominal symptomatology the results are often unsatisfactory, for it is an unfortunate fact that many of these patients are obese An atrophic, inelastic vagina combined with a thick layer of abdominal-wall fat is not conducive to an accurate evaluation of adnexal disease It is small wonder, then, that the correct diagnosis is not made more often, yet there are a few pathognomonic signs and symptoms which should arouse suspicion of the possible existence of carcinoma of the fallopian tube

AGE INCIDENCE

Judging from the time at which the disease occurred in this group of 8 patients, it may be regarded primarily as a disease of the climacteric period Six patients were from three to twenty-two years past the menopause The oldest patient was seventy-two, the youngest forty In a much larger group collected by Wechsler,[13] 53 of 192 patients had passed the menopause, the highest incidence was found between the ages of forty and fifty-five, where 66 per cent of the cases were concentrated Carcinoma of the tube may be found at an earlier age, for in addition to the cases reported by Kahn and Norris,[8] Johnson and Miller[14] also report a case in a girl of eighteen Norris[15] operated on a girl of twenty-seven with carcinoma in one fallopian tube Thus, while the disease may occur early in the menstrual life, the age distribution is in decided contrast to that of carcinoma of the ovary, with which it is most often confused, for although about the same percentage of cases occurs after the menopause, a much higher percentage is noted before the age of forty

ETIOLOGY

The origin of the disease is obscure, despite the apparent history of antecedent salpingitis in many cases Sanger and Barth[1] suggested primarily the theory of a preceding salpingitis as a predisposing cause Ewing[16] and many others have accepted this viewpoint Certainly there is much in the clinical history of such patients to suggest salpingitis Three of the 8 patients in this group had such a history Many of them are sterile, which again is suggestive The gross pathology suggests an enlarged hydrosalpinx But as Wechsler,[13] Liang,[4] Gupta,[9] and others have observed, it is rather surprising in view of the common finding of salpingitis that more cases of tubal carcinoma are not encountered Many cases have apparently no record of previous pelvic inflammation Spencer[17] and Charache[18] each report a single case of carcinoma of the tube arising in a virgin Doran, in an exhaustive review of 100 cases made in 1910 suggested another possible source "malignant degeneration of benign papillomata found frequently in catarrhal and suppurative conditions of the tube" It would seem that the assumption of such a course is largely based on inference Suggestive confirmation is noted in a case reported by Scott and Oliver[19] where a negative curettage performed twelve years after the menopause was followed eleven years later by final confirmation of tubal carcinoma Thus while many patients give a preceding history of pelvic inflammation and tend to be sterile, salpingitis as the sole precursor of malignancy of the tube is not a tenable theory It constitutes, however, suggestive information which should arouse suspicion of the possibility of tubal carcinoma

SYMPTOMS

Bleeding

The commonest finding in this series was the sudden onset of bleeding from three to twenty-two years after the menopause In nearly every

f no great amount In 1 case bleeding had oc urred for three days one year previous to admis- ion, never to reappear Recognition of the dis- ease finally came through the finding of an en larging abdominal tumor

The experience with this group as regards post menopausal bleeding is quite generally confirmed by other observers Wharton and Krock[8] found 5 cases after the menopause, with bleeding as the important symptom in 4 Anspach[11] noted bleed- ing in the 2 cases in the climacteric period which he encountered. Wechsler[12] observed 30 of 53 pa tients presenting menorrhagia as the most prom inent symptom

It is usually taught that postmenopausal bleed ing is associated with carcinoma of the uterine fundus. Hence, with the attention of the surgeon directed primarily toward the endometrial cavity, the finding of an atrophic uterus with a negative endometrium practically excludes the thought of cancer from the mind of the operator Carcinoma of the tube, however, frequently gives just such a picture. With a history of bleeding, carcinoma of the ovary is rarely present unless the endometrium is involved or hyperplasia occurs, suggesting a physiological type of tumor Thus a curettage becomes diagnostic in the presence of post menopausal bleeding, for with the finding of frank cancer or hyperplasia we should suspect the ovary, with the finding of a negative endometrium the tube.

It is not uncommon to have the disease become apparent while the patient is under close observa tion, whereas it had never been considered before. This occurred in 3 of the 8 cases in this series Bleeding continued despite a negative curettage two and a half years before admission in one pa tient and five months before in another In one of Anspach's[11] cases a negative curettage had been done eight months previously There are several similar incidents in the literature Thus we may found a warning that if no adequate cause has been found to explain bleeding following a curet tage it is necessary to suspect carcinoma of the adnexa and particularly of the tube, and to watch for a reappearance of the bleeding

Pain

As in other reported series, an indefinite sense of lower abdominal pain or soreness was consistently noted in the cases here reported Because of its variable character and location not much attention was paid to it until it was accompanied by en largement of the abdomen or the sudden appear ance of bleeding Most writers agree that pain appears early in the disease, and in this respect tubal carcinoma differs from carcinoma of the uterus and ovary

As others, notably Wechsler,[12] have noted, pain of an intermittent colicky nature may be associa ted with a sudden profuse discharge of variable character from the vagina, after which the pain subsides This was true in 4 of the 8 cases An acute episode becomes superimposed upon the pre-existing symptomatology with the sudden ap- pearance of lower abdominal pain, pyrexia, chills, spasm and a palpable tender mass, together with vaginal discharge The diagnosis of a probable flare up of an antecedent pelvic inflammatory dis- ease or of an inflammatory process following a twist of an unsuspected ovarian cyst is usually made Such a train of events was present in 3 cases A large hydrosalpinx was found in all of them at operation suggesting an old chronic sal pingitis as precursor of the disease The finding in the past history of similar episodes years before is suggestive confirmation

Wechsler[12] observed this group of symptoms in 25 per cent of his 192 reported cases If Robin son[7] is correct in his observation that the fim briated ends of the tube close late in the disease, the mechanism of its development is understand able With the huge distention of the thin walled tube by the fluid contents of tumor necrosis, peri stalsis of the tube ensues with the attempt to pass the material into the uterus and vagina During the process, intermittent colicky pains are present, which are relieved following expulsion Such a history is suggestive of tubal carcinoma and is amply confirmed by the experience of most ob- servers.

PATHOLOGY

The most important single fact concerning the pathology of tubal carcinoma revolves around the assertion by Hurdon,[9] Cullen,[1] Callahan, Schiltz and Hellwig[22] and others that the tubal wall is involved late in the disease Distant metastases are noted, particularly in the groin, before the tubal wall becomes involved This proved to be true of one of the cases reported below It thus becomes possible to make the mistake of calling the thin walled hugely dilated retort shaped tube a simple hydrosalpinx, as was done in another case in this group The extension is largely by lym phatics to the lumbar and iliac nodes, as in carci noma of the fundus of the uterus on the one hand, or to the external iliac and sacral nodes, as in carci noma of the cervix on the other Other routes of extension by continuity or contiguity are, as Robinson[7] points out purely arbitrary divisions of lymphatic spread Metastases are usually lim ited to the lower abdomen the liver rarely being involved Ascites and large abdominal masses are late manifestations of the disease. According to McGlinn and Harer[1] 30 per cent of tubal carci

nomas show metastases Another important fact is that primary carcinoma of the fallopian tubes is frequently bilateral Thus there is double danger in suspecting that a single large hydrosalpinx is benign, for the apparently normal-looking tube on the opposite side may also be the site of malignancy Most pathologists agree that the usual point of development within the tube is in the outer two thirds In most cases the fimbriated ends are found closed Robinson[7] believes that this is a late phenomenon in contrast to gonorrheal salpingitis, in which it occurs early As the fimbriae close, the tube may reach enormous dimensions as the lumen becomes distended with secretions and products of tumor necrosis This may account for the sudden development of acute lower abdominal symptoms and colicky pain, as observed in 1 of the 8 cases presented here

Microscopically little is gained by attempting to divide the malignancy into different types of carcinoma Sanger and Barth,[1] Friedenheim[21] and other pathologists have outlined three distinct types papillary, papillary alveolar and alveolar The earliest forms of tubal carcinoma are papillary, but inasmuch as they merge one into the other the division is of no great significance and, as Liang[4] pointed out, it is both superfluous and confusing Robinson[7] has observed two types within the same tube with "normal-looking tubal epithelium, except for loss of cilia, next to definitely cancerous" The important fact to determine microscopically is whether the carcinoma actually arises within the tubal epithelium or is a secondary invasion from carcinoma elsewhere, namely the uterus or ovary In this regard the late involvement of the tubal wall speaks for primary carcinoma of the tube in contrast to metastatic carcinoma, where carcinomatous implants may be found within the wall of the tube with a normal mucosal epithelium above

In most cases the uterus is atrophic with a negative endometrium, in contrast to the slightly larger uterus with hyperplastic endometrium associated with carcinoma of the ovary The fact that many carcinomas of the tube have simple ovarian cysts on the same side may be confusing in determining the site of origin of the primary carcinoma This proved to be the case in 7 cases in the present series

TREATMENT

The treatment of choice is total hysterectomy together with bilateral salpingo-oophorectomy This is important in view of the nature of the lymphatic spread of metastases, which closely simulates that of carcinoma of the fundus The chief source of error lies in the operator's belief that he is dealing with a large hydrosalpinx of benign character which it resembles in the gross because of its thin wall Bleeding after the menopause is so rare with simple pelvic inflammation as to be practically non existent It is an excellent general rule in dealing with adnexal disease, whether of tube or ovary, in any case where the suspicion of carcinoma has been raised to have the specimen opened in the operating room Thus the temptation to do a simple salpingectomy will be avoided As so often happens when the patient is in the climacteric state, a small, atrophic uterus with a negative endometrium is encountered If the suspicion of carcinoma of the adnexa has not been raised there is a temptation to give the patient radium As Anspach[11] points out, this procedure is dangerous, for the subsequent symptoms of carcinoma may be masked

As regards the use of x-ray treatment postoperatively, little knowledge can be obtained from this small series Where it had been given the treatment was evidently prophylactic rather than intensive with the hope of cure This procedure appears to be erroneous, for the total salvage after three years as reported in the literature in those cases in which no x-ray treatment was given is less than 4 per cent Intensive x-ray therapy would probably not make this survival figure worse and might improve it

PROGNOSIS

Were it not for the hope of improved results from the combined use of surgery and x-ray, together with the possibility of earlier diagnosis, the survival figure of less than 4 per cent after three years would be enough to justify considering the treatment of tubal carcinoma as hopeless. Charache[18] was able to find only 7 cases where survival had been longer than three years, Haupt's[25] maximum was twenty years, Fonyó's[26] thirteen years Zweifel's[27] eight years, Jahkola's[23] seven years and Benthin's[20] five years Recently Norris[15] reported a patient alive and well nineteen years after operation Kaplan[30] sounds an encouraging note for the combined use of surgery and external radiation by reporting a patient alive without disease four and a half years after operation In this instance x-ray treatment followed operation after six months The ideal form of treatment would be to have x-ray therapy directly follow operation

SUMMARY AND CONCLUSIONS

Carcinoma of the tube, though regarded as a rarity, has been reported 350 times, with an increasing incidence during the last decade

The age incidence is in decided contrast to carci

noma of the ovary, with which it is most often confused

Although not the only possible source the history of sterility and a preceding salpingitis in a patient with suggestive symptoms should arouse suspicion of tubal carcinoma

Bleeding is the earliest and most important single symptom

Pain appears early in the disease in contrast to carcinoma of the fundus or ovary

Intermittent colicky pain associated with a sudden profuse vaginal discharge of pus or blood, followed by relief of pain is suggestive of carcinoma of the fallopian tube.

Because of late involvement of the tubal wall the gross findings suggest a benign hydrosalpinx such a diagnosis leads to error in proper operative treatment, namely total hysterectomy and bilateral salpingectomy

The total salvage without x ray treatment is less than 4 per cent of three year cures Carcinoma of the tube is the most malignant form of genital cancer

The most important single fact is the necessity for suspecting the probable existence of a tubal carcinoma where bleeding has recurred after a negative curettage in an atrophic uterus

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CASE REPORTS

Case 1 L. C a 40-year-old sterile and widowed woman, entered the Pondville Hospital on December 7 1932, complaining of intermenstrual spotting of sufficient amount to require a pad for the previous year The menarche began at 14 years, with a regular flow every 28 days and 7 days of bleeding until 4 years previously Since then the flow had been more profuse over a 4-day interval Scant vaginal discharge had been present for 1 year There was a past history of neck dissection for lymphadenitis 27 years previously Seventeen years before entry lymph nodes had been dissected from the opposite axilla Three years previously masses of nodes were observed after trauma to the right groin. X-ray treatment was given to a carcinoma of the face arising in an old area of lupus vulgaris 1 year before. There was no history of chronic cough or hemoptysis.

On physical examination the scars of the previous operations were not remarkable. There was a hard 4-by 3-cm mass fixed in the right inguinal region. Pelvic and rectal examinations confirmed the presence of a large retroverted uterus with a long hard cervix. Blood was seen coming from the external os.

At operation in addition to a large, freely movable uterus, a cystic mass filled the right broad ligament. This was more readily felt after drainage of 120 cc. of thin watery fluid from the uterine cavity The curettings were negative. It was believed that the patient had pelvic inflammation with hydrosalpinx.

Two months later the patient was readmitted because of continued vaginal bleeding for 6 weeks. The pelvic mass on the right was more consistently felt and was believed to be a pelvic abscess. Cystoscopy ruled out the bladder as the source of bleeding Operation was again performed. Curettage failed to produce any tissue, but the uterine cavity contained bloody fluid. Abdominal exploration showed a large uterus in fair position with the right tube and ovary involved in a mass similar to a hydrosalpinx. Growth was present outside the right broad ligament and throughout the cul-de-sac. The left tube showed a hydrosalpinx, "without tumor" It was impossible to do a hysterectomy without leaving tumor consequently the uterus was left as a vehicle for radium application and 3000 mg hr of radiation was given 10 days later At the time of the operation the groin was biopsied.

Microscopic pathological study showed sections composed entirely of tumor cells of epithelioid type arranged in acinar formation along strands of connective tissue stroma. There were numerous typical and atypical mitotic figures. The tumor cells were of the low columnar epithelial type. A diagnosis was made of papillary adenocarcinoma of the fallopian tube with metastasis to the right groin.

Two months later 7000 mg hr of deep x-ray therapy was given through anterior and posterior portals. The patient died 2½ years later (July 1935) with extensive neoplastic disease

Case 2 A P, a 43-year-old married but sterile woman, entered the Massachusetts General Hospital on September 14, 1933, with a history of intermittent soreness through the lower abdomen of 2 years' duration Three attacks of severe intermittent lower abdominal ache had been noted in the past 6 months In recent months a large, hard swelling had been noted in the lower abdomen Fever, nausea and vomiting accompanied the attacks of pain Ice bags were applied for what was believed to be 'abscess of the womb" Six months previously vaginal discharge had been first noted In the past few months the discharge had become black, requiring six pads a day In the past 2 months abdominal distention with pain became a prominent symptom and was accompanied by anorexia There had been no weight loss The menstrual history for 3 years suggested the type of bleeding found in metropathia hemorrhagica

At operation large bilateral tubo-ovarian masses were encountered On the left side a tubo-ovarian abscess had twisted itself with a complete turn The uterus was enlarged, with fibroids wedged in the pelvis The lesion suggested a bilateral hydrosalpinx.

The pathological report revealed a papillary adenocarcinoma of the left tube together with acute and chronic salpingitis Intramural fibroids were present. The left ovary, 4 by 3 by 1 cm, was adherent to the wall of a thickened distended tube. The tube was retort shaped The cystic portion to which the ovary was attached measured 15 by 7 by 6 cm Within the tube there were two areas of soft friable papillary growth, each 2 cm in diameter The other tube in its gross appearance suggested a hydrosalpinx containing a brownish fluid. Microscopic sections of the left tube showed papillary structure, with a moderate number of mitotic figures

Subsequently, the patient received 5400 mg hr of deep x-ray therapy through 20-by-20-cm. fields, using anterior, posterior and pelvic portals Three years later, in December, 1936, a fixed mass was felt in the right pelvis A further dose of 3600 mg hr was given, using anterior and posterior fields The patient succumbed with metastatic disease in November, 1937

Case 3 M M, a 53-year-old single woman, entered the Massachusetts General Hospital on February 23, 1934, with a history of sudden onset of vaginal bleeding 6 months previously Usually one pad a day was sufficient to care for the discharge, but within the past 2 weeks it had become watery and more profuse with a foul odor The menopause had occurred without incident 3 years before.

On physical examination a mass was found rising out of the pelvis to the level of the umbilicus largely on the right It seemed to be adherent to the anterior abdominal wall The cervix was of normal consistence but pulled to the left.

At operation the uterus was slightly larger and more irregular than normal The right ovary was cystic and about the size of a small egg In the broad ligament an irregular cystic mass was very adherent to the uterus and left tube It was very hard in places The left ovary lay behind and was atrophic. X ray treatment was advised but not carried out A total hysterectomy with bilateral salpingo-oophorectomy was done.

The pathologist reported a primary adenocarcinoma of the fallopian tube, with an unclassified cyst of the ovary

The patient was well for 20 months She then noted an increasingly large abdominal tumor with severe stabbing pain There had been no vaginal discharge. In December, 1935, she was re-explored Moderate ascites was present, together with a peritoneum studded with nodules and a mass in the omentum The biopsy report was metastatic carcinoma X ray therapy was given. She gradually declined in weight and strength and died August 7, 1936

Case 4 I M, a 57-year-old married woman with one child, entered the Massachusetts General Hospital on October 18, 1934, with a history of intermittent bleeding of 6 months' duration The onset of menorrhagia had been sudden, for the menopause had occurred 4 years before At times only staining was noted For the past 7 years there had been a sense of bearing-down pelvic pressure, with associated backache and frequency of urination These symptoms had recently become aggravated

On physical examination a fixed tender pelvic tumor was noted suprapubically to the right. The findings were interpreted as an impacted fibroid with a question of malignancy of the fundus

At operation a total hysterectomy with bilateral salpingo-oophorectomy was done.

On pathological examination the endometrium was negative. A tube was closely adherent to an irregular knobby mass, 12 by 9 by 8 cm One portion of the tube was thickened to 2 cm Individual knobs of the mass measured 1 7 cm in diameter The sections revealed a rapidly growing, highly malignant carcinoma, primary in the tube and involving the ovaries, there was an associated acute and chronic salpingitis

The patient returned to Nova Scotia, and it has been impossible to trace her

Case 5 S P, a 72 year-old single woman, entered the Massachusetts General Hospital on February 25, 1937, with a history of vaginal bleeding of 6 months' duration The menopause had passed without incident at the age of 50 There had been no history of vaginal discharge or bleeding since that time until the onset of the present illness.

On physical examination a small retroverted uterus was felt on pelvic examination Three small nodules were felt on the rectum, lying posteriorly behind the cervix Nothing further was added to the findings on physical examination at the time of the curettage. The pathological report on curettings disclosed an inactive endometrium

Discharged from the hospital, the patient was readmitted 2 months later with a history of daily bleeding since the curettage The flow was at times copious, dwindling down to a pink stain The curettings were scanty in amount. Inasmuch as the source of bleeding had not been explained a laparotomy was performed A mass involving the right ovary and tube appeared as an irregular nodular growth Difficulty was encountered in separating the growth from the rectum, and it was believed that possibly some diseased tissue still remained in this region

Pathological examination revealed a very thin endometrium A large intramural mass was present in the uterus, measuring 5 by 3 by 3 cm. and merging into the distal half of the right tube. The latter curled back on the posterior wall of the uterus, forming a semilunar mass to enclose a normal, atrophied ovary The tube was filled with papillary tissue The fimbriated end of the tube was obliterated while the proximal end was patent. The microscopic diagnosis was primary papillary adenocarcinoma of the fallopian tube

The patient was last seen on June 1, 1939, there was active recurrence of the disease, and a terminal issue anticipated within a short time.

Case 6. G M., a 59-year-old married but sterile woman, entered the Massachusetts General Hospital on July 18 1937 with a history of lower abdominal pain associated with increasing abdominal swelling over the previous year A sense of pressure in the pelvis had contributed toward increased frequency of urination The menopause had occurred 17 years before, but no bleeding had been noted since.

On physical examination, though no mass could be outlined, a definite tenderness to palpation was observed in the left lower quadrant of the abdomen. A barium enema showed the sigmoid displaced to the right. A dense soft-tissue shadow could be seen on the left although no definite tumor could be demonstrated The diagnosis was made of disease on the left side of the pelvis, extrinsic to the bowel

At operation a cystic tumor was found filling the pelvis and believed to be a large hydrosalpinx. The uterus was thumb size. A left salpingo-oophorectomy alone was done.

At pathological examination a tube 13.5 cm. in length, with the proximal portion swollen and thickened so that it was 2 cm. in circumference, was noted. The distal part was dilated to form a cyst which measured 7 cm. in diameter this was adherent to the ovary The lumen of the tube was dilated and filled with cloudy fluid. Sections showed numerous mitotic figures and the diagnosis was adenocarcinoma of the fallopian tube. There was no invasion of the wall.

While the patient did not appear for examination she reported on July 1 1939 that she was active and well and had never felt better

Case 7 L. J J., a 54 year-old married woman with three children, entered the Pondville Hospital on November 11, 1938 with a history of vaginal bleeding for 3 days on one occasion 1 year before but without show of blood since that time. The menopause had occurred 3 years previously While confined to the hospital with a broken leg a tumor mass was found in the right lower quadrant. There had been an increased growth in the size of the tumor in the past 6 months. Actually she had gained weight. There was no history of vaginal discharge.

On examination she was an obese woman presenting a hard mass, with areas which seemed to be cystic, in the right lower quadrant. The mass was freely movable. The atrophied uterus had a small cervix which seemed to be pulled upward.

At operation negative curettings were obtained. A large mass was fixed posteriorly with the small bowel omentum and sigmoid adherent to it. This was believed to be a solid but partially cystic carcinoma of the ovary with definite inflammatory changes. Rotation in the cyst had taken place and the mass was adherent deep to the pelvis. The wall of the uterus was invaded The mesentery of the sigmoid was torn to the course of a total hysterectomy with bilateral salpingo-oophorectomy

Pathological examination disclosed a negative endometrium. On the left side of the uterus was a nodular mass which was solid except for the cystic distal portion. The fimbriated end of the tube was sealed off Behind the uterus was the right ovary Both ovaries appear normal microscopically A diagnosis of carcinoma simplex of the right tube was made, with five to eight mitotic figures noted per high-power field.

The patient reported to the clinic on April 25 1939 Examination at that time failed to show any evidence of recurrence of the disease. She had gained weight and looked and felt well.

Case 8. M.G a 58-year-old single woman entered the Vincent Memorial Hospital on November 16, 1938 with a history of vaginal bleeding The menopause had occurred 5 years before Many years before, the right tube and ovary had been removed for pelvic inflammatory disease. Curettage 5 months previously failed to explain the source of postmenopausal bleeding The patient was advised to have a hysterectomy but refused. The bleeding had continued in varying amounts since that time. In the past 2 weeks she had had chills fever and local tenderness throughout the lower abdomen, with a vaginal discharge of pure saffron pus since that time, but no blood. For 2 weeks a tender mass had been palpable in the left lower abdomen. There were no urinary or bowel symptoms There was no change in weight.

On physical examination, tenderness and spasm over lay a large suprapubic mass occupying the left lower quadrant. By pelvic examination this mass felt soft and cystic with nodular portions This was thought to be continuous with the uterus and to represent a pyometra or an inflammatory ovarian cyst, with torsion of the pedicle or possibly a flare up of an old pelvic inflammation. The temperature was 100 5 F., with a white-cell count of 18 000 The patient was obese. Because of experience with a similar case 1 week previously a preoperative diagnosis of carcinoma of the fallopian tube was made.

At operation negative curettings were obtained. A huge inflammatory mass arose from the left adnexa it extended behind the uterus and was fixed in the cul-de-sac on the right side. A large hydrosalpinx firmly enclosed what appeared to be an inflammatory cyst of the ovary The tube was elongated and the proximal part was stiff and hard. The right tube was missing. The right ovary was negative. No line of cleavage could be obtained and the cyst was ruptured in delivering it. Because of the patient's condition, the plan to perform a total hysterectomy with the removal of both tubes and ovaries was abandoned in favor of a supravaginal hysterectomy including the adnexa.

On pathological examination the right tube measured 25 cm in length and 2 cm. in diameter The wall was thickened for its entire length and the distal third was firmer and more distended than the proximal two thirds. On section the lumen was filled with soft, white tumor tissue, which was invading the wall. The end was adherent to the ovary which had been previously opened was markedly injected and measured 6 cm. in diameter On section it contained a cyst measuring 5 cm. in diameter this was lined with smooth glistening membrane on one side, but on the side adjacent to the tube there was soft, white tumor tissue It could not be determined whether there was involvement of the ovary with tumor Most of the ovarian tissue showed acute and chronic inflammation

The patient immediately before leaving the hospital was given 7700 mg hr nf deep x-ray therapy with a 400,000-volt machine, through anterior and posterior fields. When last seen she was well with no evidence of recurrence of disease.

THE EVOLUTION OF THE TREATMENT OF PULMONARY TUBERCULOSIS AT THE RUTLAND STATE SANATORIUM

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THE trend of active treatment of pulmonary tuberculosis at the Rutland State Sanatorium during the last decade, with the rise of various surgical procedures followed by the fall of some of them, is conducive to much sober thought. It shows once more that the path of medical progress is one of byways, detours and circles. Besides, to study old records is to submerge one's soul in a pool of humility, and I know of no more salutary practice.

From January, 1927, to January, 1939, 4161 patients were admitted to the Rutland State Sanatorium and classified as follows: minimal, 468, moderately advanced, 1500, far advanced, 1952, childhood type and non-tuberculous, 239 (Chart 1). Let us consider the main surgical procedures as applied to this group.

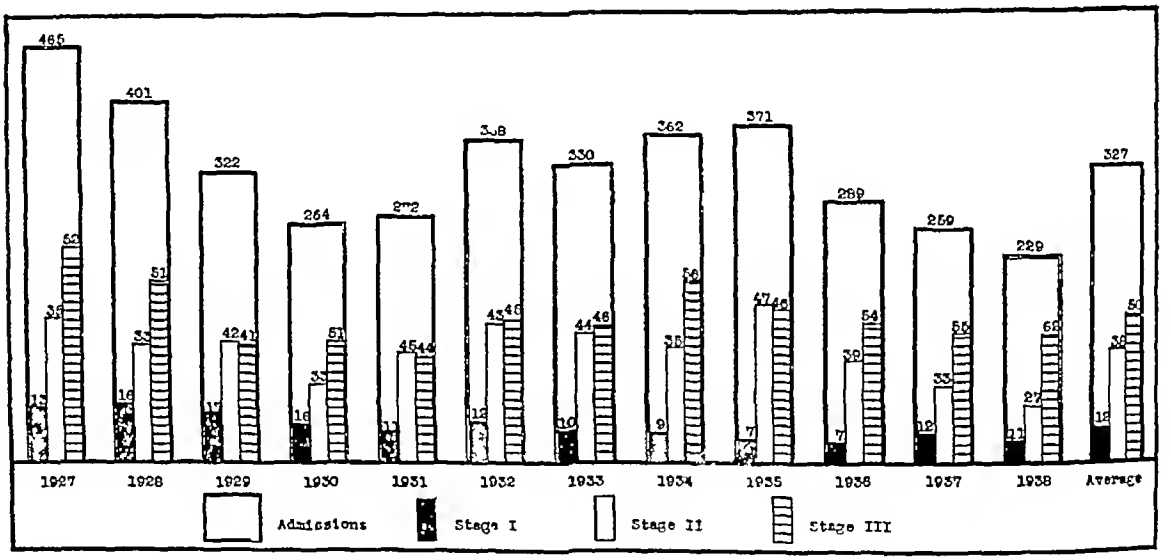

CHART 1. *Annual Admissions from 1927 to 1938, Inclusive, with Percentages Giving the Stages of Disease.*

The figures on top of the large columns are the actual number of admissions. Those over the smaller columns represent the stages in percentages. These figures and percentages are exclusive of the 'not considered,' 'hilum' and non-tuberculous groups.

ARTIFICIAL PNEUMOTHORAX

Artificial pneumothorax was done in Rutland as early as 1911, and 74 patients had already received it by 1914, at which time it was found wanting and discarded. By 1919, it had been given another trial, and Alley[1] concluded the report of a study on 21 cases with a more optimistic note. Yet for the next six years only a few cases can be found in the records.

The treatment was carried on in an unscientific and haphazard way because of the lack of experience and of fluoroscopic and x-ray control. It is only since 1927 or 1928 that the application of this treatment has become systematic. Timidly, one step at a time, we have found our way to the practice of today. Points which are now obvious were the subjects of contested opinions a little while ago. The medical journals of yesterday are witnesses to this fact in any branch of medicine. Compare the technic of 1938 to that of 1918 or even that of 1928. The large initial doses, the long intervals between refills, the withdrawals in the presence of effusions, the maintenance of ineffective and dangerous collapses appear obviously improper compared to the present well-gauged and well timed refills under constant fluoroscopic guidance, to the management of effusions by aspirations, replacement of air and lavage when needed, the resection of adhesions, and so forth. Formerly, ineffective collapses were often maintained for the simple reason that nothing better could be offered and that they made the doctor, if not the patient, feel better and less conscious of his uselessness.

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Today, pneumothorax is made to work or is discarded as useless

Then came the question of voluntary re expansion, which had not arisen before on account of the naturally short life of 95 per cent of the pneumothorax cases It is now being answered more precisely every day A minimum of two or three years for exudative lesions and of five years

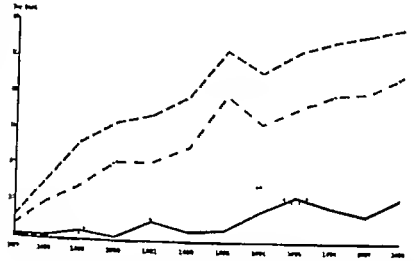

CHART 2. *Trends of Active Treatment from 1927 to 1938 Inclusive Expressed as Percentages of Total Admissions*

The dash curve represents the total pneumothoraces the dash-and-dot curve the successful pneumothoraces the solid curve the thoracoplasties and the dot curve the phrenectomies

for ulcerative, excavating processes has been generally accepted

The follow up of patients over a number of years during and after completion of their treatment has taught us much about the handling of individual cases, and the value of the methods properly and improperly applied Serial films of re-expanded lungs taken year after year have been precious lessons as to the fickleness and trickiness of apparently absorbed or healed lesions.

Artificial pneumothorax has survived ignorance mismanagement and errors of technic Its use limited at first to the strictly unilateral and moderately advanced cases, has been extended both ways to the minimal and to the far advanced cases So long as there is a ray of hope, the treatment is tried with about 60 per cent of the patients The only ones with whom it is not attempted are a few asymptomatic minimal cases, a certain group of chronic productive cases and the hopeless ones

The large percentage of suitable cases in which pneumothorax is impossible (Table 1) contributes to an increase in the number of thoracoplasties Numerous statistics have been published in the past showing gratifying results, but surveys of the next few years should reveal the much greater effectiveness of this form of treatment as carried out at present. A comparative study of this kind is now under progress in this sanatorium

PHRENIC SURGERY

Time and again eight or nine years ago we found ourselves confronted with good bases which had been permanently, and too often uselessly, sacrificed by phrenic exeresis because of damaged upper lobes in need of thoracoplasty—evidently poor judgment in the choice of the procedure, one might say Yet numerous were such cases only yesterday Even the best judgment based on the condition of the lungs at the time of operation, is unable to foresee the problem that six months or a year's time will bring up Every so often one of those "permanents" comes to us with a mediastinum out of kilter carrying a distended stomach in his axilla and complaining of various digestive disorders, usually not fatal but extremely annoying Hence the procedure has practically been abandoned (Table 2)

Phrenic interruption has been found inefficient for closing hard walled cavities It may favor absorption of early infiltrative processes It is still occasionally used as a step and a preparation to thoracoplasty after failure of pneumothorax But even here one has to be cautious The phrenic nerve is sensitive and prone not to resume all its function A recent survey of our temporarily paralyzed diaphragms revealed that after six seven

TABLE 1 *Pneumothoraces*

	1927	1928	1929	1930	1931	1932	1933	1934	1935	1936	193	19 8	Tot l
Pneumothoraces													
Unsuccessful	10	24	3	78	85	50	41	51	58	43	41	31	44
Successful	1	40	49	5"	59	93	143	119	13"	113	105	166	1036
Total	27	64	85	85	94	143	1 4	170	195	161	149	13"	1495
Successful (per cent)	63 0	62.5	57 0	67 1	60 6	65 0	6 4	70 0	70 3	3.3	2.5	"_3	69 9
Admissions	465	401	322	964	272	358	340	362	3 1	89	99	229	39__
Pneumothoraces													
Unsuccessful (per cent)	2 1	6.0	11 5	10 6	1 9	14 0	12 4	14 1	15 7	14 9	15 8	13 5	11 5
Successful (per cent)	3	10.0	15.2	21.6	21	26.0	40 3	32 9	36 9	29 8	41	46.3	37 4
Total (per cent)	5 8	16.0	26.	32.2	34 6	40 0	5 7	47 0	5 6	55.	5 5	59 8	3" 9

The increase in recent years in the percentage of successful pneumothoraces is partly due to the fact that the method is applied earlier before adhesions have formed Before 1930, pneumothorax was recommended for advanced cases only

and eight months 30 per cent had recovered only half their motion, and that 70 per cent were functioning normally, but still remained high These figures are about the same in other sanatoriums

Some surgeons are now doing only one crush in order to avoid this permanent partial paralysis They prefer repeating the operation if necessary

INTRAPLEURAL PNEUMOLYSIS

The x-ray films of pneumothorax cases before the era of intrapleural resection of adhesions constitute a gallery of distorted lobes, suspended cavities and irregular, ill-distributed, paradoxically selective collapses From 55 to 65 per cent of the pneumothoraces, incomplete on account of adhesions, are amenable to the Jacobeus operation The percentage of successful pneumothoraces is increased to that extent (Table 3)

An excessive number of complications occurred during the first three years, especially bleeding and perforations, with subsequent mixed empyema, tuberculous empyema and loss of collapse. For the last three years a more judicious choice, coupled with a better technic, has practically eliminated all complications

TABLE 3 *Pneumolyses*

	1932	1933	1934	1935	1936	1937	1938	TOTALS
Successful pneumothoraces	93	133	119	137	118	108	106	814
Pneumolyses								
Number	15	75	63	23	43	70	40	329
Per cent	16 1	56 4	53 0	16 8	36 5	64 8	37 7	40 4

OLEOTHORAX

Oleothorax was used at the beginning in order to disinfect the pleural cavity in tuberculous empyema, to close rigid-walled cavities, to prevent obliteration and to replace air when, because of distance from the sanatorium, refills became difficult or too expensive The last indication does not exist in Massachusetts The hard-walled cavities are falling more and more into the realm of thoracoplasty, and tuberculous empyemas respond fairly well, as a rule, to aspiration and to lavage with mild disinfectant or saline solution However, progressive obliteration is still fought with some success by this method

EXTRAPLEURAL PNEUMOTHORAX

Until a year ago, there were in sanatoriums an unfortunately large number of patients stranded in a no man's land between pneumothorax and thoracoplasty It is in this field that extrapleural pneumothorax has ventured and been found useful Indications for this operation do not overlap those for any of the others, rather they span the gap between them, thus increasing the number amenable to surgical treatment Therefore, in estimating its value one must not forget the type of patients treated and expect too brilliant results Considering that most of these patients were beyond help and had been virtually abandoned, one should be satisfied with a smaller degree of success than in thoracoplasty

TABLE 2 *Phrenic Surgery*

	1929	1930	1931	1932	1933	1934	1935	1936	1937	1938	TOTALS
Admissions	322	264	272	358	330	362	371	289	259	229	3056
Phrenics											
Permanent	5	28	19	73	40	42	3	2			212
Temporary				3	9	14	38	44	50	11	169
Total	5	28	19	76	49	56	41	46	50	11	381
Permanent (per cent)	1 6	10 6	6.9	20 4	12 1	11 6	0 8	0 7			6.9
Temporary (per cent)				0 8	2 7	3 9	10 2	15 2	19.3	4 8	5.5
Total (per cent)	1 6	10 6	6.9	21.2	14 8	15 5	11 0	15.9	19.3	4 8	12.5

THORACOPLASTY

With thoracoplasty we have proceeded very much in the same manner as with pneumothorax, namely cautiously, with fear and trembling (Table 4) There were only 2 cases in the first year (1927) and 2 in the second, yet we had some 365 patients to choose from Three of these 4 patients are well and working today One had to re-enter a sanatorium for treatment

The following year (1929) 7 patients received thoracoplasty and 2 died, a severe disappointment. Up to that time the selection had been most conservative The first 9 cases were of long standing, the patients were in excellent general condition, and in each the other lung was perfectly clear The tenth patient was the first one accepted with some old lesions in the "good lung" His condition was far advanced, there was a large cavity on the left, and the general condition was only fair He began to run an active course after the first stage and died six months later of generalized tuberculosis In the other fatal case the patient succumbed to tuberculous pneumonia eight days after the second stage of thoracoplasty

In 1930 there was a slump, only 2 thoracoplasties were performed The number rose to 15 in 1931 and from then on it was fairly sustained The requirements for this operation were lowered, and the films rarely showed an entirely clear contralateral lung in the cases done from the fourth year on

A period of observation is always required of the candidate for thoracoplasty during which he must show good resistance to his disease, for at best surgery can only assist the patient in healing his lesions This period is also one of rest treatment, which is the necessary foundation of thoracoplasty The time given to bed treatment is seldom less than a year, unless the patient is a readmission or has an old record from another institution

Only 28 patients, or 16 per cent of the total series, were operated on as early as three months after their admission, and 33 six months after admission. Fifteen of these 61 patients were readmissions and had had previous treatment. Twenty-one thoracoplasties were done after nine months of treatment, 55 after one year and 20 after two years The 17 others were done after three to five years of treatment.

As happened with pneumothorax, stable old lesions in the good lung ceased to inspire fear A close and detailed study of the blood* has greatly helped us to choose our cases during the past five years. This selection of cases is an important factor in the results obtained Unless a patient has a 90 per cent chance of becoming self-supporting, he should not be submitted to surgery Patients who can expect no more than chronic invalidism may as well be spared the ordeal

The period of convalescence varies between five months and a year—preferably the latter—and is a repetition of the first cure. Patients are rarely allowed up before five or six months after operation We like to start them on exercise and light work before discharge.

Most of those who have left in good condition have remained so For this there are several reasons A thoracoplasty is an impressive warning which patients are not likely to forget Knowing that they must live with one lung they gauge their speed accordingly, and adjust themselves to their condition better than any other type of patient They are also faithful in reporting for periodical check-ups, and will not consider any type of work without the approval of their physicians

The great problem after discharge is that of finding suitable occupation This is true of all "cured" tuberculosis cases, but especially of this select group Professionally trained persons, students, office workers and a certain percentage of skilled laborers can return to their former occupations, but most of the factory workers and all the unskilled laborers must find new work. To go back to laborious work is to take the shortest road to a breakdown This is one of the most difficult tasks of the Social Service Department

TABLE 4 *Thoracoplasties*

	1927	1928	1929	1930	1931	1932	1933	1934	1935	1936	1937	1938	TOTALS
Admissions	465	401	322	264	272	358	330	362	371	289	259	229	3922
Thoracoplasties													
Number	2	2	7	2	15	9	11	31	49	27	20	28	203
Per cent.	0 4	0.5	2 2	0.8	5.5	2 5	3 4	8.8	13 0	9.3	7.7	12.2	5.2

DISCUSSION

The increasing number of pneumothoraces and thoracoplasties lengthened the average duration of residence per patient from 362 days in 1932 to 459 days in 1938 Table 5 shows the rate at which the number of patients receiving some form of collapse therapy were accumulating

Phrenic exeresis used as an independent procedure at the beginning, soon passed into the category of adjuncts, to be almost discarded in late years From a peak of 73 in 1932 the phrenicectomies fell to 2 in 1936 and to 0 in 1937 At the present time, Dr Joseph Alexander[2] does only 5 exereses against 95 interruptions

The number of phrenic interruptions has also decreased Our figures for the last four years are 38, 44 50 and 11 The tendency appears to be the same almost everywhere.

Intrapleural pneumolysis seems to be the greatest step toward efficient collapse therapy taken in the past decade It is only since 1932 that it has been done regularly in this sanatorium, with 15 operations for that year Since then it has ranged between 40 and 70 cases per year

Oleothorax although not discarded is not being used so frequently as it was a few years ago

Extrapleural pneumothorax is not a procedure to be considered lightly, but it offers definite hope to otherwise hopeless cases. To the end of 1938 11 cases were done with the following results

*Conducted by Dr Gutti Lladh Muller

good 7, no improvement 3, bad 1 (bronchial fistula)

Thoracoplasty was done on 5 per cent of the total number of patients admitted during the last twelve years, and on 12 per cent of those admitted during the last five years The latter figure represents better practice than that for the first period, when too few were accepted for the operation The results for the last eleven years in 175 cases are as follows (the 1938 cases are not included) well, 103 cases (59 0 per cent), under treatment, 44 (25 0 per cent), unknown, 11 (6.3 per cent), postoperative deaths, 9 (5 1 per cent), and later deaths, 8 (4 6 per cent)

Let us study the failures first Nine patients died within a month after operation 5 of tuberculous pneumonia, 1 of collapse of the lung and effusion on the thoracoplasty side, 1 of sudden and unexplained collapse the fifth day after operation and 2 of empyema Eight died of progressive tuberculosis between six months and two years after operation Another, not included in the percentage figures, died four years after thoracoplasty, following a gall-bladder operation

Sixty patients whose sputums remained positive after operation may be classified as follows progressive tuberculosis, 29 cases, lesions on opposite side, 15, bronchial ulceration, 1, and cavity not closed, 15 Thirty-five of these patients are well today and able to lead fairly normal lives In some cases the sputum later turned negative

A look at the brighter side of the picture shows that after a little more than eleven years 147 of these 175 patients are alive, that is, 103 are well and leading normal lives while 44 are completing their cures and will for the most part soon be normal and self-supporting Remembering that 90 per cent of the cases with demonstrable cavities die within five years, these results are gratifying One hundred and forty-five of the patients had demonstrable cavities by x-ray

Pneumothorax covers a wider field, the average percentage of patients on whom it was tried being 55 per cent for the past five years In a recent article Overholt[8] comments on the results of thoracoplasty in comparison to those of pneumothorax There is no sound basis for a comparison of this kind because the two procedures reach different groups of patients Thoracoplasty, is or at least should be, reserved for a relatively small number of patients who have already mastered their infections and need only mechanical help Pneumothorax is applicable to all stages, from the minimal to the far advanced, and to those with active processes, some of which will continue regardless of what is done Pneumothorax is bound to have a larger proportion of failures than does thoracoplasty Overholt's comparison is between thoracoplasty and sanatorium treatment in a "pneumothorax era" It is based on a survey[4] made in 1931 of 208 patients treated in 1925 and 1926 at the Rutland State Sanatorium Our figures show that pneumothorax was attempted in only 50 cases during that period Of these, 2 were lung abscesses, 20 were unsuccessful, 17 were collapsed less than a year and 11 were collapsed one year or more. This therapy would not have influenced to a marked degree the ultimate fate of these 208 patients, especially if one recalls the type of pneumothorax common in those days

TABLE 5 *Summary of Active Treatment*

	1927	1928	1929	1930	1931	1932	1933	1934	1935	1936	1937	1938	TOTALS
Admissions	488	415	333	277	289	393	357	395	398	298	272	246	4161
Stage I	62	66	55	42	31	44	34	31	26	21	31	25	468
Stage II	162	131	136	88	122	155	144	128	175	113	85	61	1500
Stage III	241	204	131	134	119	159	152	203	170	155	143	143	1954
Not considered hilum and non tuberculous	23	14	11	13	17	35	27	33	27	9	13	17	239
Pneumothoraces													
Unsuccessful	10	24	37	28	35	50	41	51	58	43	41	31	449
Successful	17	40	49	57	59	93	133	119	137	118	108	106	1036
Total	27	64	86	85	94	143	174	170	195	161	149	137	1485
Number of patients during year	30	84	117	138	178	194	251	333	300	252	275	296	2448
Phrenics													
Permanent			5	28	19	73	40	42	3	2			212
Temporary						3	9	14	38	44	50	11	169
Total			5	28	19	76	49	56	41	46	50	11	381
Pneumolyses						15	75	63	23	43	70	40	329
Oleothoraces					1	8	10	10	6		3	1	39
Thoracoplasties	2	2	7	2	15	9	11	31	49	27	20	28	203
Extrapleural pneumothoraces												18	18

CONCLUSIONS

Sanatorium treatment has been prolonged instead of shortened by various surgical measures.

The results of pneumothorax and thoracoplasty are gratifying The other minor procedures being used mostly as adjuncts, the good they accomplish is more difficult to appraise They do help in many cases and this is sufficient recommendation for them The best of these procedures are pneumolysis and extrapleural pneumothorax. Our experience, however, in the latter, is still limited

Pulmonary tuberculosis remains essentially a medical problem The patient is still the great artisan of his own cure, and must control his disease before the surgeon can help him Active treatment in all its forms rests on a mechanical basis

When and if a serological or a chemical cure is finally discovered our present efforts will seem futile, yet until it is, the free pleura and the good chronic" will remain the answer to the sanatorium physician s and the chest surgeon s prayers

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CALCULUS FORMATION IN A URETHRAL DIVERTICULUM IN A WOMAN*

Report of a Case

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DISEASES of the urethra are a frequently overlooked cause of urinary symptoms in women In 234 consecutive female patients with urinary complaints Stevens [1] found the urethra to be wholly responsible for the symptoms in 56 cases and partially responsible in 173 cases A diverticulum of the urethra was found in only 1 case.

A case of urethral diverticulum containing a large calculus has recently come to our attention and is reported herewith

CASE REPORT

R. G a 52 year-old married white woman, was admitted to the Framingham Union Hospital because of difficulty of urination of 12 years duration She stated that the first symptoms referable to the urinary tract occurred at the age of 24 when following an upper respiratory infection she suffered frequency and burning of urination for several days. Following this episode she continued to have similar attacks lasting several days to a week and occurring two or three times a year Twelve years previously she suffered an acute urinary retention of 48 hours duration She did not seek medical attention at this time but, after trying various home remedies, discovered that pressure applied with the tip of the finger on the anterior vaginal wall just posterior to the external urethral orifice allowed the urine to pass. Since then this maneuver applied in the squatting position had been necessary each time during the act of micturition Eight years previously the patient was studied at another clinic where a diagnosis of syphilis was made and treatment instituted an x-ray of the abdomen was taken which showed a stone in the bladder" The patient refused further investigation of her urinary tract. At the time of admission her only complaint was difficulty of initiating the act of urination. She had recently discovered that by lying prone over a bedpan she could void without pressure on the anterior vaginal wall

The past history was significant in that at the age of 17 the patient had a miscarriage at 3 months which was self induced with the aid of a hatpin. She had no urinary symptoms following this episode. A second and spontaneous miscarriage at about 3 months occurred at the age of 45 There had been no other pregnancies. She had received antisyphilitic treatment off and on for the past seven years. The patient s mother died of "bladder trouble." One sister died of tuberculosis. Otherwise the family history was noncontributory

Physical examination revealed a well-developed and well nourished woman who was co-operative and of aver age intelligence. The right pupil was larger than the left and reacted sluggishly to light. There was marked dental sepsis otherwise the general and neurological examinations were negative.

Pelvic examination revealed no abnormalities except on the anterior vaginal wall just posterior to the external urethral meatus, where there was a mass approximately 2 cm in diameter covered with normal vaginal mucosa The mass was quite hard and appeared to be connected with the urethra A catheter was easily passed into the bladder and there was no residual urine. On cystoscopic examination the bladder mucosa appeared to be normal throughout. Excretory urograms showed no abnormality of the upper urinary tract. The base of the dye filled bladder appeared normal and the sphincters were competent. A cystogram made with the urethral catheter in place (Fig 1) showed the presence of a large stone lying in the course of the urethra about 1.5 cm. from the base of the bladder. Lateral plates, made with the urethral catheter in place and with the vagina packed with gauze saturated with a suspension of barium sulfate demonstrated that the stone lay in a sac in the urethrovaginal septum

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Laboratory examination showed the urine to contain many polymorphonuclear leukocytes Blood counts were within normal limits Three blood Hinton tests were positive The serum calcium was 9 3 mg per 100 cc., the serum phosphorus 4 0 mg, and the phosphatase 5 7 Bodansky units The blood nonprotein nitrogen was 28 0 mg per 100 cc

A preoperative diagnosis of calculus lying in a diverticulum of the urethra was made. Operation was performed January 3, 1939, under low spinal anesthesia A transverse incision was made through the anterior vaginal wall over the prominence of the stone. The wall of the diverticulum was freed throughout its extent and was found to communicate with the lumen of the urethra through an ostium approximately 1 cm in diameter The sac, with the contained stone (Fig 2), was amputated at its neck, and the defect in the urethra was closed with fine catgut sutures The incision in the vaginal mucosa was closed with chromic catgut.

FIGURE 1 *Cystogram with Urethral Catheter in Place There is a large calculus lying in the course of the urethra, well below the bladder*

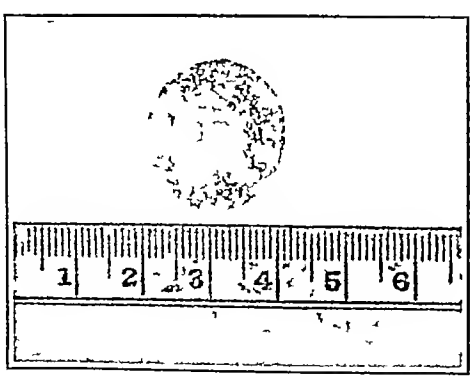

FIGURE 2 *Stone Removed from Urethral Diverticulum*

Urethral catheter drainage of the bladder was maintained for 10 days after operation. Healing occurred by first intention and, following the removal of the catheter, the patient was able to void without delay or discomfort. Since then she has remained entirely symptom free, and recent urine examination showed no cells in the sediment.

INCIDENCE

Diverticulum of the female urethra has been reported in the surgical literature with increasing frequency during the last twenty years, and as such can no longer be considered a clinical rarity Calculus formation in such a diverticulum is, however, decidedly rare Shivers and Cooney[20] reviewed the literature up to 1931 and were able to find reports of only 22 cases An additional case reported by them at that time brought the total to 23 cases

In the present study, a careful search of the literature from 1931 to 1938, inclusive, has been made A total of 10 cases has been found in the literature during that interval (Table 1) The new case presented in this report makes a grand total of 34 cases reported to date This does not include cases reported by Begg,[1] Bibus[2] and others in which stones have descended from the upper urinary tract to become impacted in the normal female urethra Two cases mentioned by Walters and Thiessen[23] were not included because sufficient details were not presented in their report

TABLE 1 *Recently Reported Cases of Calculus Formation in Diverticula of the Female Urethra*

AUTHOR	AGE OF PATIENT	DURATION OF SYMPTOMS	TREATMENT	RESULT
	yr			
Earlam[4]	59		Removed vaginally	Cure
Holman[8]	27		Removed vaginally	Cure
Hunner[9]	77	37 yr (mass present 3 yr)	Removed vaginally	Cure
	52	5 mo	Removed vaginally	Cure
	66	1 yr	Removed vaginally	Cure
Lewis[13]	43		Removed vaginally	Cure
Marion[15]	75	4½ yr	Removed transvesically	Cure
Podleschka[15]	33		Removed vaginally	Cure
Stevens[21]	50		Removed vaginally	Cure
Szenteh[22]	66	14 yr	Removed vaginally	Cure

ETIOLOGY

The etiology of diverticulum of the female urethra has long been a matter of speculation and of disagreement Watts,[24] in 1906, after a thorough review of the subject concluded that in men the etiology of urethral diverticulum could be classified as follows

A Congenital

B Acquired

1 From dilatation of the urethra
   a Due to urethral calculus
   b Due to urethral stricture

2 With perforation of urethra resulting from
   a Injuries to the urethra
   b Rupture of abscesses into the urethra
   c Rupture of cysts into the urethra

Since then numerous authors have attempted to adapt diverticulum of the female urethra to this

lassification Various authors have stated that the ongenital or true' diverticulum is one whose vall contains all the elements of the wall of the ormal urethra.[20] Others[4, 9] have suggested that lining of normal urethral mucosa indicates a rethral diverticulum of congenital origin In peaking of diverticulum of the bladder, Young[26] ng ago pointed out that regardless of its origin, hether congenital or acquired, the wall of the ladder diverticulum might contain some or none the elements that make up the normal bladder all. Because diverticulum of the female urethra in many respects comparable to diverticulum of e bladder, this observation tends to minimize e importance of the microscopic structure of the verticulum as an aid in determining its etiology he presence or absence of the lining mucous embrane is particularly unsatisfactory as a terion of etiology because of the frequent pres- ce of secondary infection, which so often de oys all evidence of lining mucosa.

Coupled with the above observations is the more rtinent fact that no case of urethral diverticulum s ever been reported in a girl infant The closest proach to this situation was reported by John],[22] who presented the case of a newborn girl ose urethra was obstructed by a cyst of the throvaginal septum The cyst was removed ough an incision in the vaginal mucosa Johnson ats out that had this congenital cyst ruptured) the urethra it would have resulted in a urethral erticulum It is evident that had this chain vents occurred, the result would not have been ongenital diverticulum but rather a congenital forming a diverticulum

emnants of Gartner s ducts have been sug ed as possible congenital causes of female thral diverticulum.[11] This suggestion may be missed by the knowledge that these wolffian nants lie far lateral to the urethra, and em ologically play no part in its formaion.[19]

any cases of congenital diverticulum of the e urethra have been reported To be of con tal origin such a diverticulum must be in the ulous urethra at or near the fossa navicularis.[13] ryologically the entire female urethra is equiv t to only that part of the male urethra lying veen the internal urethral orifice and the veru tanum Hence, from a comparison of cir stances as they exist in men and in women, is again forced to conclude that diverticulum ne female urethra does not occur as a con al defect

ice diverticula of the female urethra probably not occur as congenital defects, they must sarily all be acquired, probably as a result auma, infection or both The most obvious trauma to the urethra is that sustained during parturition The mechanism of this injury is probably twofold first, compression of the urethra between the symphysis pubis and the fetal head during delivery, with injury to its supporting coats, and second, a general relaxation of the supporting ligaments of the internal genitalia with prolapse of bladder and urethra Both these factors are probably responsible in a majority of cases Since the external meatus is the smallest portion of the female urethra, a back pressure is produced within its lumen with each act of micturition This back pressure probably distends the diverticulum and causes it to enlarge

Instrumentation of the urethra may of course be responsible for an initial injury to its wall, with subsequent diverticulum formation This factor was probably entirely responsible for the etiology of the diverticulum in Holman s[8] case, in which a bit of slippery elm was found to form the nucleus of a calculus that was present in the sac.

Periurethral abscess in women is unusual but may arise from infection of the urethral glands. Rupture of such an abscess cavity into the lumen of the urethra might be responsible for the de velopment of a diverticulum in an occasional case. Similarly intraurethral rupture of a cyst developing from the gradual dilatation of an obstructed ure thral gland could be responsible. Herzenberg s[7] case of bilateral calculus formation in the distended lumina of Skene s glands in a child of eleven lends credence to the latter theory

McNally[16, 17] has recently suggested that such diverticula may be the result of traction exerted during the resolution of a periurethritis a mecha nism similar to that producing traction diverticulum of the esophagus

Since the lumen of a urethral diverticulum will allow for the stagnation of urine with subsequent infection and with local changes secondary to the infection, the determination of the etiology is dependent on the symptoms at the onset of the disease. Because these symptoms usually occur many years before the patient consults a physician the etiology in an individual case is usually a mat ter of speculation

Stagnation of urine with secondary infection offers an ideal combination for the precipitation of urinary salts and formaion of calculus. Periodic emptying of the diverticulum with coitus, changes of posture, and so forth, probably accounts for the rarity with which calculi are found

Several of the reported cases with calculus formation have given a history of preceding renal colic. In an occasional case, a stone descending from the upper urinary tract becomes lodged in a preformed urethral diverticulum, where it grows

by accretion Bibus[2] points out that in such cases multiple stones are often found, whereas if calculus formation occurs primarily within the diverticulum, a single stone is usually present

CLINICAL FINDINGS

The symptoms of urethral diverticulum, with or without calculus formation, are those of lower urinary-tract infection usually present intermittently for months or years These include urinary frequency and burning nocturia, pyuria and, rarely, hematuria which, when present, is usually of the terminal type In the absence of calculus many patients discover that digital pressure on the anterior vaginal wall causes the evacuation of pus from the sac, with temporary improvement of the symptoms Symptoms of urethral obstruction are rare whether calculi are present or not However, in the case presented above the weight of a large calculus caused a kink of the urethra, which required digital pressure under the stone in order to allow urine to pass

Local examination reveals a smooth, spherical swelling of the anterior vaginal wall just posterior to the external urethral meatus This swelling is hard in the presence of calculus, and with multiple calculi, crepitus may be felt Urethroscopy demonstrates the mouth of the diverticulum in the posterior wall of the urethra, usually in its middle third, while cystoscopy usually reveals a normal bladder

The size and anatomical relation of a diverticulum without stone may be established by x-raying the diverticulum after it has been filled with a solution of sodium iodide or other radiopaque medium After the diverticulum has been evacuated by digital pressure it may be easily filled with the radiopaque solution by filling the catheterized bladder with the solution and then having the patient void In cases with calculus present, cystograms taken with the urethral catheter in place usually suffice to establish the diagnosis

TREATMENT

The treatment of urethral diverticulum with or without stone is entirely surgical The sac of the diverticulum is readily approached through an incision in the anterior vaginal wall Resection of the sac with resuture of the urethra and vaginal wall has given universally satisfactory results In all reported cases healing has occurred promptly, without sepsis or the formation of urethrovaginal fistulas The functional results in each case have been excellent

The operation should not, of course, be undertaken until blood and urine studies have demonstrated the absence of significant renal drainage In an occasional case where such damage is of sufficient degree to increase the risk of operation, a preoperative period of urethral catheter drainage may properly be instituted until the renal function has returned to approximately normal In rare cases it may be advisable to drain the bladder suprapubically before undertaking repair of the urethra, although only 1 such case has been reported[20]

Simple removal of the calculus without removal of the diverticular sac has been mentioned It is stated[2] that after this procedure the sac shrinks in size and causes no further symptoms Such treatment is illogical, since the majority of urethral diverticula occur without stones and tend to enlarge gradually rather than shrink Removal of the sac presents few difficulties and adds nothing to the seriousness of the operation, provided, of course, that the external sphincter of the bladder is carefully avoided

Marion's[16] case presented a very large stone, weighing 35 gm and lying in a diverticulum with a large opening into the urethra Because of the size of the stone it was removed through a suprapubic incision This is the only such case reported, although several cases are reported[1 2] in which this route has been employed for the removal of stones impacted in the urethra but not lying in diverticula

SUMMARY

Urethral diverticula in women are not uncommon, although calculus formation in such a diverticulum is decidedly rare

Probably urethral diverticula in women are never congenital in origin but always acquired as a result of trauma or infection, or both, to, in or around the urethra

Calculus formation in such a diverticulum is usually due to local urinary stasis with infection, which allows for the precipitation of urinary salts

Treatment is surgical, and consists of removal of the diverticulum together with its contained stone.

The literature is reviewed and the thirty-fourth reported case of calculus formation in a urethral diverticulum in a woman is presented

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MENINGITIS DUE TO *MICROCOCCUS TETRAGENUS**

Report of a Case with Recovery Following Treatment with Sulfanilamide

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THE organisms which are responsible for most cases of meningitis are the following tubercle bacillus, influenza bacillus (*Hemophilus influenzae* of Pfeiffer), meningococcus pneumococcus and streptococcus Less frequently the following organisms have been reported to cause meningitis colon bacillus,[1 2] gonococcus,[3 4] *Brucella abortus*[5] staphylococcus[6] *Micrococcus tetragenus*[7] diphtheria bacillus,[8] actinomyces[9] and yeasts.[10]

Until quite recently the mortality from meningitis, except that due to the meningococcus has been alarmingly high However with the introduction of specific antiserums and with the use of sulfanilamide or its derivatives the treatment of meningitis is far more hopeful The mortality from meningitis due to the tubercle bacillus is still 100 per cent Fothergill[11] has reported some encouraging results with the use of specific antiserum in cases of *H influenzae* meningitis Sulfanilamide plus the specific antiserums has lowered the mortality rate in cases of meningitis due to meningococcus[1] and pneumococcus[12–17] The most startling results, however have been obtained with the administration of sulfanilamide in cases of meningitis due to *Streptococcus hemolyticus*[18–22] Whereas before the introduction of sulfanilamide in the treatment of this type of meningitis there was only an occasional cure, with this drug at our disposal it is now expected that the majority of cases will recover This drug has also been found useful in treating cases of meningitis caused by some of the organisms less frequently encountered [3] It becomes of primary importance, therefore when dealing with a patient suspected of having meningitis, to resort to lumbar puncture as early as possible in order to determine the etiologic organism so that the proper treatment can be promptly instituted

On account of both the rarity of the infecting bacterium and the successful outcome following the use of sulfanilamide, the following case of meningitis due to *M tetragenus* is reported

CASE REPORT

The patient F A., was an 18-year-old white boy Until the present illness he had apparently been in good health. There had been no history of upper respiratory infection or discharge from the ears On February 27 1939 he went to bed with no complaints. He had a restless night, however and the next morning when he tried to get up out of bed he felt quite dizzy He dressed and went downstairs for breakfast but became so sick that he returned to his bedroom where he vomited and went back to bed. He vomited several times during the morning and then developed a headache. The temperature gradually rose during the morning and by noontime had reached 104 F The next morning the temperature descended to normal and the patient felt so well that he wanted to get up and go out He had breakfast and luncheon and apparently relished the food. He took a nap in the afternoon and when he awakened he complained of severe headache and stiff neck. The temperature rose to 100.3 F and he had a very restless night with practically no sleep. His general condition the next morning March 2 was worse in spite of medication. He complained of severe headache and rigid neck. It was deemed advisable to transfer him to the hospital

There was nothing unusual in the family history or in the past history of the patient. Physical examination showed a young man lying in bed complaining of severe headache and unable to move because of the fear of increasing it. The skin and mucous membranes were rather pale. There were several healed acne lesions on the face. The pupils were small regular and equal. No tenderness could be elicited over the sinuses or the m

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toids The throat was not injected, and the ears were normal The neck was quite rigid, and there were no enlarged cervical nodes The patient was unable to turn his neck laterally or anteroposteriorly Examination of the chest was negative. The abdominal muscles were moderately rigid, and the abdominal reflexes were sluggish Both knee jerks were absent. There were positive Kernig and Babinski signs on both sides The patient was hypersensitive to touch The temperature was 100 4°F, the pulse 106, and the respirations 26

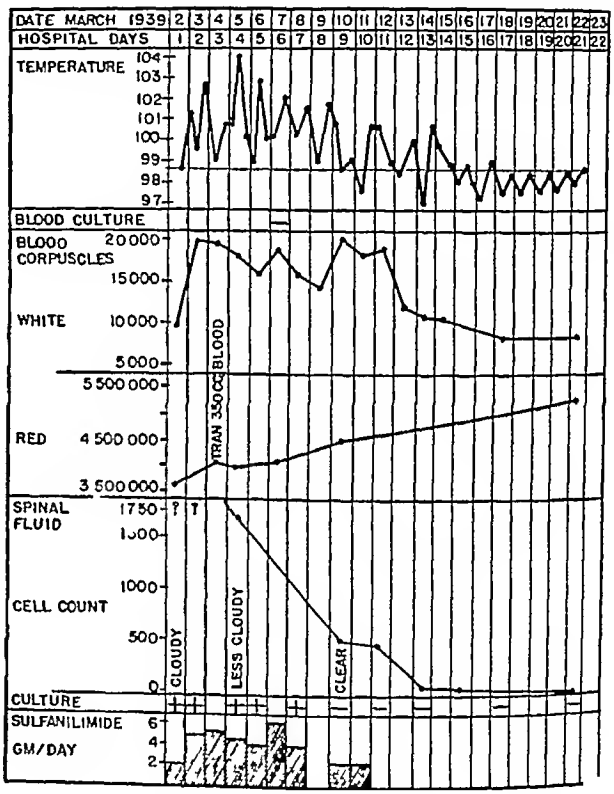
A lumbar puncture was done and about 20 cc. of turbid fluid was obtained, which contained much fibrin The fluid drained rather slowly A smear showed many pus cells, with polymorphonuclear leukocytes predominating Many gram positive diplococci were present. These were biscuit shaped and somewhat larger than meningococci They were surrounded with thick, halo-like capsules, and some were arranged in tetrads The organisms were found both outside the pus cells and within them Culture of the spinal fluid, on agar, yielded grayish-white, rather delicate colonies which were quite transparent. In broth there was a uniform growth throughout the fluid. A smear of the cultures showed the same type of organism as that found on direct smears of the spinal fluid gram-positive, biscuit-shaped diplococci, also arranged in tetrads The morphology, the staining reaction and the cultural characteristics of the organisms were consistent with those of *M tetragenus*[24] The urine examination showed 2+ albumin, 2 per cent sugar, a trace of acetone and an occasional granular cast. The blood showed a red-cell count of 3,680,000 with 70 per cent hemoglobin, and a white-cell count of 9900 with 92 per cent polymorphonuclears

The patient was immediately put on sulfanilamide. During the night, he was very restless and was given 1/6 gr of morphine. The next day, March 3, there was no change in his general condition. He still complained of severe headache, and his neck was rigid. Lumbar puncture was done, and 25 cc. of turbid fluid was removed The patient seemed to rest a little more easily after the lumbar puncture, but again became restless during the night. He complained of pain in both ears, although examination of them showed no pathologic changes The urine examination showed 1+ albumin and only a trace of sugar The blood sugar was 160 mg per 100 cc. On March 4 the general condition was slightly improved. The patient was given 350 cc. of blood with no reaction, but during the day he had several loose brown dejections On March 5 he had difficulty in breathing through his nose, complained of pain in the right ear and was mentally somewhat confused A lumbar puncture was done and only 8 cc. of fluid was removed. This was less turbid than the previous specimens, and there were fewer organisms present in the direct smear, the cell count was 1690 The blood sugar was 118 mg per 100 cc Urine examination was negative for albumin and sugar, and sugar did not reappear in any of the specimens examined after this date

On March 6 the patient was nauseated and rebelled against fluids by mouth. He complained of severe headache and pain in both ears He was seen by an otolaryngologist, Dr Byron H Porter, whose report was as follows

> The mucous membrane of the nose was red and irritated. The septum had a high deflection to the right, encroaching on the right ethmoid labyrinth There was some fresh, purulent overflow from the ethmoid walls [a culture of this yielded the same organism as that found in the spinal fluid] Transillumination showed the frontal sinuses to be clear, and there was no clouding of the antra. The throat was moderately injected The posterior pharyngeal wall showed evidence of a low-grade, chronic infection Both ear drums were normal There was no redness and nothing to account for the pain in the ears

The patient was tapped again, with some relief of the stiffness of the neck. A blood culture was negative. He had more loose brown dejections during the day The next day, March 7, the head was pulled to the left side, owing to the rigidity of the muscles on that side of the neck A lumbar puncture was done and 15 cc. of fluid was obtained. This fluid was quite clear, and a direct smear showed no organisms, although cultures were positive. This was the last positive spinal fluid, and all positive specimens had shown the same organism After



the tap, the patient had no more headache or pain in the ears On March 10 the general condition was improved The knee jerks were present though sluggish the Kernig and Babinski signs negative and the abdominal reflexes more active The patient appeared brighter On March 11 he was able to move around in bed more easily, although toward night he again complained of headache and was unable to go to sleep without the help of medication. On March 12 his skin and lips had a bluish tinge. On March 13 his general condition was much improved. The patient could turn in bed more easily, and his general attitude was more cheerful From this day on, the patient made an uneventful recovery He was up and about on March 19, and was discharged from the hospital on March 23, free of any signs and symptoms referable to the nervous system The accompanying chart shows graphically the course of the various factors in the case.

A perusal of literature brings out the fact that *M tetragenus* is very rarely found as the cause of meningitis This organism is ordinarily found in

the nose and throat, where it is not considered to be pathogenic. Although this patient gave no history of upper respiratory infection, it is likely that the organism gained entrance to the central nervous system from the right ethmoid sinus. It is obvious, therefore, that one should carefully examine the upper respiratory tract for possible foci of infection in these cases.

It is interesting to note that the urine examination on admission showed 2 per cent sugar and that the blood sugar the next morning was 160 mg. per 100 cc. All subsequent specimens of urine were found to be negative for sugar, and subsequent blood sugar estimations gave a normal sugar level. Inasmuch as the patient had never had a history of glycosuria and had not been taking sweetened drinks or glucose before admission, it seems reasonable to assume that the temporary hyperglycemia and glycosuria were due to irritation of the midbrain.

It is regrettable that a blood culture was not done on the day of admission. Although a blood culture taken on March 6 was negative, the patient had already been taking sulfanilamide for five days. As this drug has a bacteriostatic effect on bacteria, we cannot tell whether the patient had a bacteremia due to *M. tetragenus* during the early part of the disease. Of course the important question that arises in one's mind is how large a part sulfanilamide played in this case to effect a cure. This is difficult to answer. The mere fact that the drug was used and the patient recovered is no proof that it was responsible for the cure. A single case cannot decide this question. It is better to defer judgment on this subject until there has been more experience with sulfanilamide in this type of meningitis.

In following this case I gained the impression that in this type of meningitis one is not dealing with a very virulent type of organism and that if the patient can be kept alive until he has manufactured enough immune bodies, he will recover. Were I again faced with the same situation I should look for possible foci of infection in the upper respiratory tract, give supportive treatment, do a lumbar puncture as often as indicated by the patient's condition and give sulfanilamide in adequate doses.

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REPORT ON MEDICAL PROGRESS

RADIATION THERAPY

RICHARD DRESSER, M D *

BOSTON

THERE are many benign conditions in which radiation can be used with benefit, most of these are diseases of the skin and are satisfactorily handled by the dermatologist The specialist in radiation therapy is chiefly concerned with the treatment of cancer

The technic of radiation is so important that it deserves special mention in any comprehensive discussion of the subject Some confusion seems to exist as to the relative merit of x-ray and radium, and there is much controversy regarding the value of x-rays produced at potentials greater than 200,000 volts

The amount of radiation from an external source which can be delivered to a deep-seated neoplasm such as a carcinoma of the cervix, bladder, esophagus and so forth is governed chiefly by two factors first, the wave length of the beam, second, the distance of the source of radiation from the patient The shorter the wave length of the beam the greater the penetrating power, and the greater the distance of the source of radiation the greater the dose arriving in the depths The latter statement may seem paradoxical but is nevertheless true The shortest, most penetrating rays generally available for therapeutic use are the gamma rays of radium If radium could be obtained in sufficient quantities, it would be the ideal agent for external application However, the supply of radium is so limited that its use at a distance of more than a few centimeters increases the time of treatment beyond practical limits For this reason x-rays which can be produced in great intensities at comparatively little expense have largely replaced radium Radium finds its chief use in relatively small, well-localized, accessible lesions in which the element can be implanted or with which it can be placed in direct contact The fact is being generally recognized that large amounts of radium are unnecessary, and a sizable clinic today finds itself adequately equipped with from 100 to 200 mg (about $5000 worth)

The wave length (penetrating power) of an x-ray beam depends on the voltage at which it is produced The higher the voltage the shorter and more penetrating the beam It has been pointed out that x-rays can be produced in huge amounts and therefore can be used at greater distances than is practical with radium The usual deep-therapy machine employs a potential in the neighborhood of 200,000 volts X-rays thus generated do not have the short wave length or the penetrating power of the gamma rays of radium However, if the voltage is sufficiently increased, x-rays can be produced which are as short as or even shorter than the gamma rays of radium Commercial x-ray units have recently become available which operate at 400,000 volts, and there are several specially designed machines which have developed potentials of 1,000,000 volts or more [1] Van de Graaff and his associates [2] have carried out physical measurements on x-rays produced at more than 2,000,000 volts The high voltage research group at the Massachusetts Institute of Technology have recently obtained a grant for the construction of an electrostatic generator which is expected to produce radiation at 3,000,000 volts It is planned eventually to use these rays, which will be shorter than radium rays, for medical purposes

These higher-voltage x-rays, technically called "supervoltage rays," possess a number of advantages The skin tolerates this type of radiation better than it does 200,000-volt radiation, and larger doses can be administered without the danger of serious damage to the superficial tissues Because of the greater penetrating power, larger amounts of radiation can be delivered to the depths than is possible at 200,000 volts (in some cases the difference is as high as 20 per cent) The untoward general reaction of the patient is less when the shorter wave lengths are employed Most observers who have worked with supervoltage machines report more satisfactory regression of deep-seated cancers, but this type of apparatus has been in use for such a short time that significant end results are not available

GENERAL CLINICAL CONSIDERATION

One of the greatest advances in radiation therapy had its beginning in Coutard's [3] work at the Radium Institute in Paris He demonstrated that much larger doses of x-ray could be tolerated by the skin than had previously been considered safe [illegible] the publication [illegible]tard's observations bad practice f[illegible] st to produce mor

*Roentgenologist Collis P Huntington Memorial Hospital Boston

than a mild redness of the skin Today, the development of a severe dermatitis following the administration of a curative dose of radiation to a malignant neoplasm is the rule rather than the exception Such reactions are characterized by blistering and even mild ulceration They usually subside within a week or two During the acute stage, the affected area should be kept clean with soap and water and a thin coating of vaseline or lanolin applied

Following x ray or radium treatment a general reaction known as roentgen sickness sometimes develops. This manifests itself by anorexia nausea and vomiting The cause of this reaction is not well understood The inhalation of ozone from high-tension electrical apparatus undoubtedly plays a part in some cases Masks which remove ozone have been devised for the patient to wear during treatment Plenty of rest and the ingestion of large amounts of sugar during the series of radiation treatments may help

The mucous-membrane reaction following radiation frequently causes the patient more discomfort than the skin reaction After treatment of the mouth and throat the patient may experience considerable pain with difficulty in masticating and swallowing food The diet should be limited to fluids and soft solids, and a solution of aspirin in water should be held in the mouth and used as a gargle. Opiates may be necessary for a few days In cases of carcinoma of the larynx the edema resulting from radiation occasionally blocks the passage of air completely Facilities for a tracheotomy should be close at hand Irradiation of the abdomen may cause sufficient irritation of the intestinal mucosa to produce diarrhea, sometimes with blood in the stools Opium in the form of paregoric usually gives relief

Any operative procedure in an area which has been heavily irradiated should be undertaken with caution This applies particularly to the mouth and throat. Changes occur in the normal tissues chiefly vascular, which lower their resistance to infection I have seen the extraction of a tooth result fatally in a patient irradiated two years previously for carcinoma of the mouth

Since the administration of a curative dose of radiation is not entirely without hazard and may cause, temporarily at least additional suffering it behooves the radiologist to distinguish as best he can among those cases which will be benefited by his therapy and those which are hopeless Unfortunately, this is a difficult thing to do The pathologist has afforded some help in the prognosis by grading the malignancy of tumors according to their microscopic appearance It may be said in general that rapidly growing tumors of high malignancy are likely to regress under radiation but are prone to recur and metastasize Low grade, slowly growing tumors are more resistant to radiation, but if they can be brought under control there is a greater chance of permanent cure of the local lesion and less chance of secondary deposits It is known that some neoplasms are entirely unresponsive to radiation For example, a melanoma of the skin may continue to grow even after the surrounding normal tissue has been ulcerated, whereas an epithelioma in the same individual may be made to disappear quite readily under radiation The two most important factors in prognosis are size and accessibility of the tumor A small superficially located lesion may respond satisfactorily to a single intensive dose of x-ray or radium, whereas a large or deep-seated lesion may prove to be incurable after weeks or even months of treatment

RADIOLOGICAL MANAGEMENT OF THE COMMONER TYPES OF CANCER

Some of the most brilliant results of radiation therapy are obtained in the treatment of cancer of the skin There are two principles to be followed in the radiation of any new growth first, a uniform distribution of energy throughout the lesion of sufficient intensity to destroy all neoplastic cells, second a minimal amount of damage to adjacent normal structures In deep-seated lesions it is often difficult to fulfill these conditions However, in the treatment of cancer of the skin it is comparatively easy to irradiate the diseased area uniformly and intensively without serious necrosis in the surrounding tissue We[1] recently reviewed a large series of epitheliomas and divided them into three groups according to their sizes. The first group included those lesions not greater than 1 cm in diameter the second group those between 1 and 2.5 cm and the third group those lesions greater than 2.5 cm In the first group it was found that 98 per cent were curable by radiation In the second group the results were almost as good However in the advanced cases the three-to-five year cures fell off to a bare 50 per cent This illustrates the great necessity of early diagnosis and treatment It has been shown that cancer involving the cartilage of the wing of the nose is entirely amenable to radiation and does not require surgical removal with plastic operation Lesions involving the cartilage of the ear however, usually do poorly and are best treated by operative removal Epitheliomas adjacent to the eye should be radiated The results are functionally and cosmetically better than when surgery is employed In cases where radiation has been given a fair trial but has failed to cure the disease, surgery should be resorted to

The method of treatment of the local lesion of carcinoma of the lip is still in some dispute In

many clinics all lesions of the lip are radiated However, a small, well-localized carcinoma in this region is easily curable by V excision and the patient is subjected to less discomfort than he is with radiation Large lip lesions which would require plastic closure following surgical removal should in general be treated by radiation Fortunately, carcinoma of the lip is a relatively benign lesion and only a small percentage of the cases develop metastases in the nodes of the neck Metastatic nodes should in general be removed surgically They are usually radio-resistant

The majority of lesions of the buccal mucosa, tongue, pharynx and larynx are now treated by radiation Small, localized lesions in the anterior part of the mouth or in the larynx are amenable to surgery, but these constitute a small percentage of the cases which come under observation The clinical diagnosis of carcinoma of the mouth usually presents no difficulty to one familiar with this condition, but certain inflammatory processes may give rise to confusion The importance of a biopsy on all suspicious lesions should be strongly emphasized, for early diagnosis is of paramount importance [5]

The treatment of early, localized carcinoma of the breast is primarily a surgical problem When the disease is confined to the breast with no axillary or more distant metastases, five-year cures result in about 70 per cent of cases subjected to radical mastectomy When the axillary nodes are involved this figure is reduced to about 20 per cent Most radiologists have dispensed with routine preoperative radiation, but postoperative x-ray treatment should be given to all cases showing involvement of the axillary nodes Care should be taken in selecting cases suitable for surgery, since removal of the breast in a case which is primarily inoperable usually makes a bad matter worse Contraindications to surgery are nodes above the clavicle, metastases in the viscera or bones and inflammatory types of carcinoma (carcinoma *en cuirasse*) In young women sterilization by x-ray is of value, particularly in those cases which have developed bone metastases The pain resulting from secondary deposits in the bones may often be relieved for considerable periods by x-ray therapy [6]

Radiation is the method of choice in treatment of carcinoma of the cervix Radium is to be relied on primarily, but the addition of external treatment with high-voltage x-ray improves the results, particularly in advanced cases [7]

Carcinoma of the body of the uterus (endometrium) should be treated by hysterectomy Many surgeons combine radiation with operation Those cases which are inoperable frequently do well with radiation alone

Ovarian carcinoma should also be treated surgically In inoperable or recurrent cases, external radiation may serve to hold the disease in check and retard the accumulation of fluid in the abdominal cavity It is rarely curative

Malignant lesions of the bladder, if not too far advanced, should be treated by surgical removal or radium implantation In extensive lesions, much palliation can be secured by supervoltage x ray treatment [8]

Carcinoma of the prostate is usually radioresistant, although an occasional case responds well to a combination of radium implantation and x ray treatment The pain resulting from metastases to the spine and pelvis can frequently be relieved by radiation

Embryoma of the testicle is frequently radiosensitive Many surgeons prefer to radiate these tumors before removing them It is also well to give prophylactic radiation to the abdomen and chest Even though metastases develop, they can often be controlled by x-ray treatment [9]

The only kidney tumor showing marked radiosensitivity is the Wilms tumor However, other types of neoplasms can frequently be reduced in size, and hemorrhage from tumors invading the renal pelvis may be allayed by external radiation

Neoplasms of the stomach, liver, gall bladder, pancreas and colon are not amenable to x-ray or radium therapy However, an occasional case of carcinoma of the rectum does well under radiation Carcinoma of the esophagus can be made to regress by external radiation, but a dose sufficiently great to destroy the neoplasm usually causes ulceration which results in a fatal mediastinitis

Carcinoma of the bronchus is usually not responsive to radiation, although there is an occasional rare exception

Primary osteogenic sarcoma is generally radioresistant, and if favorably located should be treated surgically Ewing's tumor is very radiosensitive and x-ray therapy is the method of choice in such cases An occasional giant-cell tumor does well, and much palliation is frequently secured in cases of multiple myeloma

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CASE RECORDS OF THE MASSACHUSETTS GENERAL HOSPITAL

ANTEMORTEM AND POSTMORTEM RECORDS AS USED IN WEEKLY CLINICOPATHOLOGICAL EXERCISES

FOUNDED BY RICHARD C. CABOT, M.D.

TRACY B. MALLORY, M.D., *Editor*

CASE 25361

PRESENTATION OF CASE

A six year-old colored girl was admitted to the hospital because of the presence of purpuric spots in the skin.

The child was apparently well until one and a half weeks before admission when she developed several painless "spots" in the skin which persisted until entry. Other similar bruises appeared after almost insignificant injury to the skin. There were no other complaints until four days before admission when she stated that her stomach "hurt." She later began to vomit, usually after meals, the vomitus consisting of ingested food. The abdominal discomfort was never localized by the child, appeared to be mild in severity, and seemed to be present usually before the act of vomiting. She complained of weakness and malaise, but had no other symptoms. In the past, she had had whooping cough seven months before admission with uneventful recovery. The patient had been a state ward for three years. Nothing more of the family or past histories was known. So far as could be determined there had been no contact with lead or benzol.

Physical examination revealed a well-developed child who appeared nervous and apprehensive. On the skin of the forehead, the right eyelid, the left upper arm and the skin of the legs were several dark red and purple ecchymoses which measured from 2 mm. to 2 cm. in diameter. The skin of the abdomen and back was clear. The conjunctivae, the gums and the palate showed small petechial hemorrhages, both old and recent. The heart and lungs were negative. The abdomen was diffusely tender to deep pressure but showed no spasm. The patient complained of pain when any part of the body was handled or maneuvered by the examiner.

The temperature was 100.5°F., the pulse 148, and the respirations 48.

The urine examination was negative. The blood examination showed a red-cell count of 1,400,000 with 29 per cent hemoglobin (Sahli). The hematocrit was 10.1. The white-cell count was 2,000 with 18 per cent polymorphonuclears and 82 per cent small lymphocytes. There were approximately 10,000 platelets per cubic millimeter, and the reticulocytes numbered 0.8 per cent. The red blood cells showed some anisocytosis and poikilocytosis. The blood clotting time was 5 minutes, with positive retraction of the clot, the bleeding time was 2 hours. A tourniquet test of 7 minutes produced thirty petechiae, each with a circle 2.5 cm. in diameter. A fragility test showed hemolysis in from 0.36 to 0.22 per cent salt solution, with the control test 0.38 to 0.22. A wet blood mount showed no sickle cells. Stool examinations revealed 4+ guaiac tests. A blood culture was negative. A blood Hinton test was negative. The throat culture was negative for beta hemolytic streptococci.

X-ray films of the skull, pelvis, femora, tibiae, spine, arms and wrists were all normal for the age of the patient. A chest plate was negative. The spleen was not enlarged on the flat abdominal plate. An electrocardiogram was negative, with a rate of 150.

The patient ran a slow, steady, downhill course. The temperature ranged from 99 to 104°F. but averaged about 101. The pulse varied between 90 and 160 per minute, but averaged about 140. The red-cell count and hemoglobin levels fell steadily, in spite of six transfusions totaling some 4000 cc. of blood to 630,000 and 24 per cent, respectively. The white-cell count fell to 1100. The polymorphonuclear count averaged 8 per cent, most of the cells being small lymphocytes, an occasional myeloblast was seen. The reticulocyte count fell to zero, and no platelets were observed in the smear. Purpura continued and the child developed a severe almost persistent epistaxis which could not be adequately controlled. On the thirty ninth hospital day the left border of cardiac dullness was percussed 6.5 cm. from the midline, 2 cm. outside the nipple line. The right border of cardiac dullness was at the right sternal edge, thereafter its size was not noted to change. A blowing systolic murmur was heard. Treatment included a high vitamin diet with liver (intramuscularly), calcium, iron and symptomatic care.

Terminally, hematuria developed and a few rales were heard at the bases posteriorly. The patient died on the fifty second hospital day.

DIFFERENTIAL DIAGNOSIS

DR. LOUIS K. DIAMOND*: So far as could be determined this patient had had no contact with lead or benzol. We always seem to inquire for the possibility of lead intoxication in the presence of any anemia and yet by actual experience we have still to see a case of purpura with anemia as a result of lead intoxication, even in the most severe

* [illegible] Harvard Medical School

and acute forms The usual lead intoxication with severe symptoms and a high level of lead in the blood produces a secondary hypochromic anemia, without reduction of platelets and no purpuric tendency so far as we have been able to find

The evidence on physical examination and blood examination was in favor of this being an aplastic blood state, with very little evidence of regeneration The reticulocytes were low, and there is no mention of nucleated red cells, the platelets were low, white blood cells low, and hemoglobin also low, with a color index of 1 0 In other words there was failure on the part of the bone marrow to produce or deliver cells of all types As for x-ray findings we are chiefly interested here in the possibility of any changes in the long bones, seen particularly in the malignant processes such as leukemia and lymphoblastoma In leukemia one frequently sees at the growing ends of the long bones, that is, just proximal to the metaphyseal lines, a line of rarefaction This is not specific for leukemia but is seen so frequently that the diagnosis is suggested by the finding of this line However, this occurs in only about a third of the cases of malignant blood diseases in growing infants and children, therefore in two thirds we find no such changes, particularly in the acute leukemias where the condition has been present for only a matter of a few weeks The bone changes may not have had time to develop

The cardiac manifestations seem to have been those of decompensation, secondary to cardiac dilatation due to very severe and rapidly increasing anemia If one attempted to approach this diagnosis from a study of the blood smear itself, which I had the privilege of seeing before this exercise, one could only say that there was a severe aplasia, very few immature cells of any of the series, red cells particularly, no platelets and no changes in the character of the red or white cells Some of the polymorphonuclear neutrophils were relatively young, that is, late myelocytes, but there were apparently no characteristic immature blast forms among the lymphocytes or mononuclear cells There were a few very large cells with basophilic cytoplasm but too few to be diagnostic of one particular type of blood malignancy This does not mean that the bone marrow and the other hematopoietic organs in the body could not have been infiltrated with malignant cells, and yet no such cells were seen in the peripheral blood Such a state occurs very frequently in children, particularly in these so-called acute leukemic states However, on the basis of personal experience I think that this type of severe aplastic anemia occurs most frequently following known or unknown infection — I say "unknown" meaning undiscovered during the life of the patient About 75 per cent of such severe aplastic anemias have been proved either in life or at postmortem to be due to widespread infection of many organs, usually with a bacteremia or septicemia, or to some unknown toxin Frequently the bone marrow shows extreme aplasia, as if subjected to the action of a toxin such as benzol Yet one finds no evidence in life or even at postmortem examination of any known toxin The remaining 25 per cent of cases with this type of story and course have been due to malignancy of one sort or another, usually lymphoblastoma or so-called leukopenic or aleukemic leukemia, without necessarily any evidence of blood-stream invasion, that is, no characteristic lymphoblasts or malignant cells in the peripheral blood This type of invasion of the hematopoietic organs, particularly of the bone marrow, can very well produce secondary aplasia as severe as this The spleen and lymph nodes do not necessarily have to be involved in this acute process, although it is worth remembering that without recognized splenomegaly during life the spleen at postmortem may be somewhat larger than normal The abdominal pain is interesting because many children with acute or subacute leukemia have, as the initiating complaints, severe abdominal pain and vomiting In such cases these symptoms may be due either to the extension of the purpuric tendency to the bowel, with hemorrhages into the mesentery and the mucosa, or to enlarged lymph nodes throughout the mesentery and intestinal tract These points are in favor of acute aleukemic leukemia, but the possibility of acute aplastic anemia cannot be ruled out.

DR HAROLD L HIGGINS Our differential diagnosis centered around aleukemic leukemia and aplastic anemia In the absence of definite evidence pointing to aleukemic leukemia, we made a diagnosis of aplastic anemia

These patients are very pathetic They are alert mentally but uncomfortable by reason of nasal packs used to stop the bleeding We kept this child alive for weeks with transfusions which were quite expensive and time consuming, yet one feels duty bound to keep trying in the hope that perhaps something may happen for the better

DR DIAMOND There is possibly one additional point against ordinary aplastic anemia, namely the rate at which the transfused red cells disappeared from the peripheral blood Ordinarily a patient with chronic aplastic anemia can be kept alive for months by transfusion every two or three weeks

DR HIGGINS In spite of hemorrhages?

DR DIAMOND I did not consider that Of course severe recurrent hemorrhages could coun

: beneficial effects of frequent transfu

CLINICAL DIAGNOSIS

: anemia

DR DIAMOND'S DIAGNOSIS

ileukemic leukemia (aplastic phase)?
aplastic anemia, due to infection or un
own toxin?

ANATOMICAL DIAGNOSES

c anemia
rhagic bronchopneumonia.
ic hemorrhages of skin intestinal mucosa,
ous surfaces, right renal pelvis
l abscess of left kidney

PATHOLOGICAL DISCUSSION

IACK B MALLORY I do not know that the
em examination helps very much ex
idd some facts The bone marrow was
ly aplastic in both the long and the
s One could find only minimal erythro
sis and virtually no white-cell formation
mber of phagocytes was considerably in
and there was a great deal of hemosiderin

Whether that was part of the purpuric
I do not believe we can say
gards infection we found a single abscess
ortex of the kidney which was evidently
standing because it was very thoroughly
ated and had a dense wall of leukocytes
sma cells It was only a centimeter in
; and it is hard to believe that it could
m important in the picture There was a
l bronchopneumonia, and there were pete-
morrhages scattered throughout the viscera
n the skin, the intestinal tract containing a
any I have no explanation to offer for the
nal pain, unless it was due to the intestinal
nages There was a little free blood in the
al cavity, which in itself could provoke a
al reaction but it seemed hardly enough
instance to make that likely The peri
l contained some excess fluid and since the
weighed only 100 gm., I think it probably
s for the apparent enlargement of the heart
e nothing to offer as to the etiology In
think we are getting more and more skep-
the diagnosis of idiopathic aplastic anemia
f the cases which present that clinical pic
rn out at autopsy not to have aplasia They
ave hyperplastic marrows, sometimes with
e extramedullary hematopoiesis. Those in
group present diffuse neoplastic changes
hout the marrow The true primary aplas
tic anemia is very rare, although unquestionably commoner in children Dr Diamond has had much more experience with that than I have

CASE 25362

PRESENTATION OF CASE

A sixty five year-old woman was admitted to the hospital complaining of abdominal pain of four years duration

The patient had made frequent visits to the Out Patient Department for a period of eleven years before her present admission She stated that she enjoyed coming to the clinics because she got so little diversion at home She had been treated in the eye and ear departments from eleven until five years before entry for corneal opacities, myopic astigmatism, presbyopia and deafness She was followed in the dental and orthopedic clinics for minor complaints In the medical department five years before entry she complained of attacks of precordial pain which were supposedly relieved with nitroglycerin A chest plate showed a heart enlargement in all diameters with calcification of the arch of the aorta The blood Hinton test was negative and the blood pressure 194 systolic, 90 diastolic Rest was prescribed, and later, small daily doses of digitalis were administered Subsequently about three years before entry she complained of precordial distress and palpitation associated with a cold which was accompanied by a productive cough nausea and diarrhea Examination at that time revealed a regular pulse of 88 with heart sounds of good quality and a blood pressure of 150 systolic, 86 diastolic the lungs were normal She soon recovered from the cold but complained frequently of feeling "miserable" and of "terrible palpitation" She continued to take daily doses of digitalis and phenobarbital, which had been prescribed Two years before admission she began complaining of abdominal cramps with the "least bit of food" ingested at mealtime, and one month later noted abdominal pain with only a drink of water Because of the patient's forebodings about cancer, which she stated was "in the family" a gastrointestinal series was done ten months before entry this was reported as negative She was fairly well until about two months before admission when she developed a cold which left her in a "terrible condition" She then noted headache and pains in the chest, back, left arm and legs. She ate little and lost weight although the amount was not stated She had had one episode of diarrhea which she thought was the result of eating baked beans She stated that she had had occasional attacks of abdominal cramps and had experienced the sensation of a lump in her abdomen

which seemed to move from "left to right" She further stated that for thirty years she had suffered attacks of diarrhea following excitement

The family, marital and past histories were noncontributory

Physical examination revealed a partially deaf, white-haired woman who had many complaints but was in no obvious distress There was apparent evidence of recent weight loss There were bilateral partial corneal and lenticular opacities, and the vessels of the fundi were reported as "sclerotic." The heart was in the upper limits of normal size, the rhythm was regular at 78, and there was a soft apical systolic murmur The sounds were distant A_2 was greater than P_2, and the blood pressure was 178 systolic, 88 diastolic. Examination of the abdomen revealed a diastasis recti, with generalized tenderness over the large bowel A non-tender tangerine-sized mass was palpated in the right lower quadrant, and a similar firm, ballotable one was noted to the left of the umbilicus The liver, kidneys and spleen were not felt By rectal examination a soft non-tender mass the size of an ovary was palpated between the rectum and sacrum The remaining examination was essentially negative

The urine sediment contained 12 white cells per high-power field The blood examination showed a red-cell count of 4,400,000 with 80 per cent hemoglobin, and a white-cell count of 7000 with 62 per cent polymorphonuclears, the smear was normal A phenolsulfonephthalein test showed 12 per cent excretion in fifteen minutes, and 47 per cent in seventy-five minutes The serum protein was 6 8 gm per 100 cc, and the nonprotein nitrogen 23 mg, the chlorides were equivalent to 99 5 cc of N/10 sodium chloride An electrocardiogram showed a normal tracing A spinal-fluid examination was negative

A barium enema showed a constant defect, 4 or 5 cm in diameter, which appeared to rise from the medial aspect of the ascending colon The mass was lobulated and ulcerated, and lay largely in the lumen A second mass, 9 cm in diameter, was noted in the left midabdomen It was smooth and sharp in outline, and in it a constant fleck of calcium was seen The lesion did not compress or displace the bowel and in several views was seen to be as much as 5 cm from the lower pole of the kidney

A flat plate and an intravenous pyelogram taken in the Out Patient Department a few days before admission showed a sharply defined 9-cm mass partially overlying the lower end of the left kidney It contained a small area of calcification in its upper and outer quadrant There was prompt excretion of the dye, which filled normal-sized and normal shaped kidney pelves and ureters The mass was of approximately the same density as the kidney and remained in constant relation with the kidney Films of the chest were negative, except for a primary Ghon's tubercle in the right upper lung field The heart size was within normal limits

On the seventh day an operation was performed

Differential Diagnosis

Dr George G Smith "By rectal examination a soft non-tender mass the size of an ovary was palpated between the rectum and sacrum" That is misleading I do not believe it is possible to feel the ovary in that position I think it probably was a lymph node

"The urine sediment contained 12 white cells per high-power field" I do not know whether it was a catheter specimen or not If it was not, such a statement has absolutely no significance

The phenolsulfonephthalein test was somewhat low One would expect better than 12 per cent excretion in fifteen minutes However, a good deal depends on the way the test was done, and whether the patient had a catheter in the bladder at the time If you try to have a patient void every fifteen minutes it is apt to be a rather unsuccessful procedure. The total of 47 per cent in seventy-five minutes is slightly lower than normal, but not markedly so

The great majority of this patient's symptoms seem to have been so inconsequential that there is not much to discuss until we get down to the examination of the masses in the abdomen You will remember that a preceding gastrointestinal examination, which I presume included a barium enema, was done ten months before, and showed nothing abnormal So we must assume that this mass had grown quite rapidly, although the patient had had gastrointestinal symptoms for quite a long time, obviously much longer than the organic disease which was demonstrated would account for

In summarizing I should say that we are presented with the story of a sixty-five-year-old woman most of whose symptoms, although varied, can be considered as having little if any relation to her condition on entry The recent symptoms which seem to have been of importance were chiefly of gastrointestinal origin She had cramps suggestive of something wrong with the large bowel, although even a drink of water which obviously had gone no farther than the stomach, apparently aroused attacks of pain immediately after ingestion There were a few pus cells in the urine, a finding which does not seem to be of great importance.

The positive findings consisted of the demon-

tration by x ray of an ulcerative mass, 4 or 5 cm n diameter, in the ascending colon, which seemed o project into the lumen of the colon There was a second mass in the left side of the abdomen, and there is some question in my mind as to whether that was the same mass which was de cribed in the reports of the intravenous pyelogram and of the flat plate of the abdomen If so, the ize varied somewhat I think it was probably the same mass, and to carry out that suggestion is the fact that there was a fleck of calcium found in the mass in both x-ray films In the first film this mass was seen to be as much as 5 cm from the lower pole of the kidney In the intravenous pyelo gram the mass overlay the lower end of the kid ney and remained in constant relation with it. We do not know how much care was taken to check the accuracy of that statement. Undoubt edly it overlay the kidney and remained in the same relation in an intravenous pyelogram film, but whether the patient was turned and whether the mass was pushed around in the abdomen and plates taken afterward in order to demonstrate whether it was in actual connection with the kid ney, I do not know I am inclined to believe from the history that only two masses were demon strated There was a mass in the right colon and one in the left side of the abdomen, which one observer thought was in constant relation to the kidney and another found to be separated from the kidney by as much as 5 cm

On the seventh day an operation was done. I cannot see from the history as I read it that there was any primary disease in the urinary tract. If the left-sided mass was definitely in relation to the kidney, I think it was probably secondary and came from the original mass which I believe to have been in the ascending colon I should think that lymphosarcoma or some form of lymphoid tumor would probably be the most likely diagnosis. The fact that the intravenous pyelogram showed a normal pelvis and calices in the left kidney and the fact, which I am assuming and which is all I can do on the evidence that I have here, that the mass which was found in relation to the left kid ney was probably the same mass which at times was 5 cm away from the kidney, lead me to think it was certainly not a primary tumor of the kidney, most certainly not a hypernephroma or renal-cell carcinoma It is possible for metastases to develop close to the kidney I remember one woman who a number of years after her breast had been removed for carcinoma, presented her self with symptoms of obstruction in the left kid ney, to make a long story short we demonstrated a mass just below the kidney pelvis over which the ureter hooked We thought that this mass proba bly arose from the kidney but on operating I found the mass right in between the lower pole of the kidney and the lower aspect of the kidney pelvis. The mass was an adenocarcinoma and probably a late metastasis from the breast So you can get metastases from other places which can be deposited anywhere in and around the kidney, particu larly I should say at the lower pole Lymphosarcoma of the intestine, according to Ewing, is quite likely to metastasize to the kidney area

I think we must ask the radiologist if he can give us any further help

Dr. Richard Schatzki The film taken at the end of the barium enema showed this filling defect slightly above the ileocecal valve, possibly involv ing it. The spot films do not add anything in particular to this appearance. Glancing through the films I cannot see definite evidence of ulcera tion but there are some pictures which certainly suggest it The lesion in this region is a lobulated mass and definitely intrinsic. There is no evidence of obstruction produced by the mass. As regards the other mass on the left side of the abdomen I have looked through the films as carefully as I could and I cannot find a single film in which the 9-cm mass is separated from the kidney It over lies the kidney in all the films.

Dr Smith You think there are only two masses demonstrated?

Dr. Schatzki Yes one in the ascending colon and one on the left side which has a constant rela tion to the left kidney though the lower pole of the kidney seems to be visible within the shadow of the mass

Dr. Smith The fact that Dr Schatzki has drawn attention to namely that there really is no evidence that this mass has ever been seen separated from the kidney puts a different aspect on the problem. On the basis of the x-ray evidence we have to as sume that this mass was definitely connected with the kidney It was not an infiltrative growth which was invading the kidney otherwise it would have produced a disturbance in the outline of the lower calices It almost seems as if it overlay this part of the lower calyx and still did not cause any distortion What might it have been? Possibly a solitary cyst because, as Dr William F Braasch, of the Mayo Clinic has pointed out, a cyst of the kidney gives a more dense shadow than does a tumor of the kidney The calcification I suppose, might exist in the wall of the cyst I have seen a very markedly calcified cyst but if that were the case I do not see how to hook it up with a lesion in the bowel Some cysts are malig nant but the lesion in the bowel is apparently a

Our knowledge of tuberculosis has taught us that the nature of the small lesion picked up by x-ray — that "spot on the lung" — cannot be accurately estimated with a single observation We have learned that this x-ray shadow may be an innocent fibrotic scar or a latent lesion lying dormant for weeks to years before finally breaking out into active disease, or that it may represent an early active process which is slowly or rapidly destructive We know that only repeated x-ray studies and clinical observations, sometimes over a period of years, can determine the true character of these shadows But do we examining physicians impress our patients with the necessity of this check-up, or do we casually tell them of the "spot" which they may forget? If these facts are borne in mind, the percentage diagnosis of minimal disease will quickly rise from its low level of 13

A second cause of the poor showing in early diagnosis lies in the failure of our educational program to instruct the patient properly regarding tuberculosis Organized tuberculosis associations do their share of educational work But on each family physician rests an enormous burden of responsibility in educating his own patients in the measures of prevention and the means of early diagnosis

Third in importance in maintaining the present low percentage of minimal cases is the reluctance and the fear of the patient to report to his physician the symptoms which he suspects may be due to tuberculosis This attitude also must be met by our educational program

Early minimal tuberculosis may be found in the young and healthy adult although often only by x-ray examination However we may regard the present national figure of only 13 per cent of tuberculosis diagnosed in the minimal stage, the responsibility for this low figure rests chiefly with the practicing physician

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PEDIATRICS LOOKS AT ADOLESCENCE

Adolescence, like the glands of internal secretion, the vitamins, athlete's foot and the neuroses, is in danger of becoming another catch phrase, one closely linked to maladjustment, misbehavior and abnormal psychology Even Charlie McCarthy, irrepressible vox ventris of the ether, excused his own misdeeds in a recent broadcast on the basis of his adolescence

In expressing a pediatric viewpoint of adolescence in the current issue of the *Harvard Medical Alumni Bulletin,* Garland* makes the distinction between the physical changes that occur in either sex at puberty, and the period of emotional adjustment to life that these changes necessitate This is the period of adolescence, beginning with puberty and ending when full maturity is reached Obviously the duration of adolescence must vary according to the intellectual capacity and the social status of the individual, and the degree of civilization of the race

It is a period of readjustment, of internal expansion and frequently of storm and stress — the *Sturm und Drang* of the German writers — but it is manifestly absurd to think of it as a period of abnormality It is a period that will create little disturbance with many youngsters, but one during which a wisely directed guiding hand will be of a good deal of assistance to others

"Restrained and inarticulate," according to this author, "the adolescent no longer reveals his innermost thoughts at home, and thus fails to benefit from the safety valve of a confidential relationship with the parent The parents have also their reticences The father, even if he recognizes the desirability of it, cannot talk to this strapping and somewhat arrogant youth as that individual needs to be talked to, nor can the mother approach the daughter according to her needs"

Parents can be instructed in the types of relationship that will bring them closest to their children so that they may serve them best in childhood and adolescence, but in addition the adolescents need

*Garland J Adolescence a pediatric viewpoint Harvard Med Alum. Bull 13-92 97 1939

some kind of adult companionship that is free from family inhibitions

It may frequently be the physician who can best serve as parent-substitute, and particularly the pediatrician, if he has dealt wisely with his patients during their childhood In this terra nova of medical interest he has early staked his claim

MASSACHUSETTS MEDICAL SOCIETY

SECTION OF OBSTETRICS AND GYNECOLOGY*

RAYMOND S. TITUS, M.D *Secretary*
330 Dartmouth Street
Boston

INVERSION OF THE UTERUS

Mrs A B., a twenty four year-old para II, was delivered by low forceps on May 9 1923, nineteen days before the expected date of confinement.

The family history was negative. The patient had undergone all the usual children s diseases but otherwise had had no serious illness Catamenia began at thirteen, were regular with a twenty six-day cycle and lasted three days with very slight pain Her last period was August 18 1922, making her due on May 28 Her first pregnancy had been uneventful This pregnancy had been normal except that at two and a half months she had had some flowing with a few pains She was put to bed and kept there for a month The remainder of her pregnancy was normal.

On May 9 she started up in normal labor After one and a half hours of the second stage a diagnosis of an unrotated OLP was made The vertex was rotated manually, and a forceps was readily applied The baby was delivered with very slight traction There was no fresh tear of the perineum and the uterus acted well. While waiting for the placenta to come away, gentle manipulation of the uterus was performed and at once a mass protruded from the vagina This was the placenta attached to the inverted uterus The membranes were readily peeled off but the placenta was firmly adherent in parts and came off piecemeal There was practically no bleeding The interior surface of the uterus was washed with alcohol and the inverted fundus was readily pushed back into the vagina A constricting cervix was felt above By manipulation and gentle pressure up on one side it was seen that the uterus could be pushed back within the cervix This was gradually accomplished and finally the fundus was pushed up beyond the cervix, the hand was held within the uterus and ergot was given intramuscularly A the uterus was felt to contract, the hand was slowly withdrawn The uterus was washed out with 2000 cc. of salt solution followed by 1000 cc of 70 per cent alcohol At the end of the operation the patient s pulse was 110 and she was in excellent condition

The convalescence was normal, and she was allowed to get up on the twenty first day

Comment This is a typical case of spontaneous inversion of the uterus It is very difficult to understand how and why these spontaneous inversions occur this one was associated with an adherent placenta It is rather surprising that after the placenta had been separated from the uterus no bleeding occurred and that no symptoms or signs of shock attended the manual removal of the placenta or the replacement of the uterus

As in most cases of inversion when diagnosed promptly the reversion was accomplished simply It is doubtful if today the operator would wash out the uterus with alcohol the uterus would probably be packed with sterile gauze. Such packs should be removed within twenty four hours This patient suffered no hemorrhage so that the need of transfusion did not arise.

COMMITTEE ON INDUSTRIAL HEALTH

At the last meeting of the Council, Dr W Irving Clark of Worcester, was appointed chairman of the Committee on Industrial Health This committee is supposed to co-operate with the Council on Industrial Health of the American Medical Association and information is already being sought by the latter

Since there is no listing of physicians who are engaged in industrial work in Massachusetts, the committee requests that all physicians who are engaged in full or part time industrial work mail postcards to Dr Clark at 1 New Bond Street Worcester giving their names, those of the firms with which they are connected and the office addresses of both

ADVICE TO WOMEN A DISCUSSION OF THE CYCLE

The normal age for young girls to become young women, which we speak of as the age of maturity varies considerably in different countries and different climates. In our temperate zone, if maturity occurs from twelve to sixteen years of age it may be considered to be within normal limits. Certain perfectly normal girls have matured before twelve, and others after that, but most fall

A series of selected case histories by members of the section will be published weekly Comment and questions by subscriber are solicited All be discussed by members of the section

A "Green Light" talk entitled "Girls" by Dr Joe V Meigs on Wednesday July 4 and sponsored by the Public Health Committee of the Massachusetts Medical Society and the Massachusetts Department of Public Health.

within these limits Monthly periods do not always come with definite regularity In the beginning several missed cycles should not be considered abnormal unless this persists The usual length of the normal period is from two to six days, and the interval between cycles is from twenty-one to thirty five days, with an average interval of twenty-eight days There are many variations in the interval, duration of the cycle, and the amount of bleeding If there is any doubt in the mother s mind, consultation with the family physician should be sought. Perfection is rare, and only unusual difficulties have any importance in young girls

Absence of cycles is cause for investigation This difficulty may be due to various reasons — from abnormalities or absence of the proper organs at birth to poor condition of the blood, which we call anemia, or other debilitating diseases Abnormalities at birth and absence of organs are rare. Poor living conditions, anemia, lack of proper rest and food, and worry are not uncommon causes. It is well known that in serious illnesses — acute and chronic — the cycles may stop entirely until health is restored Trouble with the thyroid, pituitary or ovarian glands, typhoid fever, rheumatic fever or tuberculosis may cause stoppage Underdevelopment of the womb is also a cause

It is not too uncommon to hear of normal cycles starting in girls as young as nine, but such occurrences should not be considered as normal until it has been proved that there is no trouble with a certain gland in the brain or glands in other parts of the body or that there is no tumor of the ovary A late onset may be normal, or it may mean that the organs responsible for maturity have not developed as they should have. This late onset may be quite important, and its cause should be investigated If investigation and treatment are delayed too long a girl may be deprived of ever having normal cycles and, therefore, normal reproductive function

Too many or too few, too long or too short cycles — if they should persist for a year — demand investigation in order to find out whether there is any general or glandular reason for such behavior Correction of an abnormality is often possible by very simple means It is infrequent in these times to resort to serious surgical operation in abnormal cycles Most of the difficulties are not serious and are not caused by real disease.

Discomfort in the lower abdomen and loins and a sense of pressure are often felt at the time of the cycle. Severe pain — that is, enough to cause absence from school or work — is a reason for consultation with the family doctor Often the pain is exaggerated out of all proportion because of a lack of a simple explanation to the girl and because of the anxiety of the mother If the pain cannot be relieved by ordinary quieting medicines, surgical procedures guarantee relief in at least 85 per cent of patients Thus no one should be allowed to suffer enough to need morphine or [illegible] for relief It is much safer to operate than to reli[illegible] derivatives

Sterility in young women [illegible] problem for intensive investigation of both hu[illegible] wife, with a very good possibility that the re[illegible] found and corrected Relief of sterility is [illegible] impossible, due to permanent changes that ha[illegible] in eith[illegible] husband or wife. But if no[illegible] present [illegible] ay be obtained in a high p[illegible] es

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nothing need be done, but if the cycle is long or too frequent, an investigation should be made. The difficulty may be simple or functional, but occasionally it may be due to tumors or cancer As this is the age when cancer is most likely to start, it is well to take no chances If the abnormality is due to trouble with the glands, sometimes the new hormone or glandular preparations may be successful in relieving the symptoms If these are unsuccessful, radium or x-ray treatment will nearly always cause a rapid and satisfactory cessation of the cycles It is in this age — just before the change — that many of our greatest mistakes are made, for women are often lulled by the idea that the difficulty is simply due to a difference occurring at the end of their cycles An abnormality in cycle or any change in personal hygiene should — after the age of forty — be considered as serious until proved otherwise. By following that rule many disasters can be prevented and many cures of a dread disease can be accomplished

The use of radium or x-ray treatment is as successful in stopping abnormal cycles as it is in the treatment of cancer When treatment with any form of radiation is offered, many women refuse to consider it. Or if they do consider it, they feel that the doctor is not telling them the truth Radium and x ray have been used for so many years in the treatment of cancer that most women do not realize that they have any other use. Abnormalities of the cycle occurring from forty five to fifty years of age and due to benign or non-cancerous changes are best treated by radiation, which, by stopping ovarian function, brings on the oncoming change. This artificially produced menopause is not more violent or more serious than the normal, but as it is deliberately brought about it is often more abrupt The same treatment is as satisfactory for relief of hot flashes and nervousness due to this type of change as in the natural menopause The female glandular preparations offer an excellent substitute for an ovary which is worn out Thus, abdominal surgery, which used to be necessary in these conditions, may be avoided and the result is just the same Advice to have radiation must not be considered as suggesting the presence of cancer Non-cancerous troubles are relieved more easily than cancerous tumors

The climacteric or menopause occurs on the average at the age of forty-seven, but it may occur as early as forty or as late as fifty-five. This seems to be a time of great dread and worry for a woman, but it is doubtful if over 5 per cent of women have any serious or even annoying difficulty at this time Many women never know they have had it except to notice that their cycles have ceased. Often this time and the years succeeding the change are the happiest and most satisfying of all a woman's years. Today this is a more fortunate age than it was a few years ago, for hormones and glandular preparations are now made in such strength that nearly all the symptoms can be relieved or at least diminished. The usual symptoms are flashes, dizziness, nervousness, night sweats, irritability and, sometimes, depression Treatment by means of the female hormones or gland preparations relieves most of these symptoms with great ease Often the medicine can be given by mouth, but sometimes it is necessary to give large amounts by injections The idea that change of voice, excessive growth of hair, obesity, lack of interest or even insanity is due to the menopause [illegible] not correct, and only in rare instances does the menopause result in serious disturbances More courage in approaching this time and faith in modern medicine will [illegible] a lot to take away the dread of this period of life.

The onset of any sort of a cycle after the change should

be a cause for alarm for in many instances tumors are responsible and sometimes they are cancerous. Early diagnosis and treatment may cure even the cancerous ones, and the benign or non-cancerous ones can be easily dealt with successfully Any return of a cycle after the menopause has once occurred is serious and must be thoroughly and competently investigated.

Women often ask if hysterectomy — or removal of the womb — means that they will change into fat, deep-voiced, hairy individuals. Of course this is not so. There is no doubt but that with the stoppage of ovarian function some changes may occur but all women are subjected to this hazard at the normal menopause. The surgical or radiation menopause is no different than the natural one, except that it is brought about abruptly It has been recently shown that the ovaries are of great importance, and removal of them should be avoided if possible. If a woman should be operated on for abnormal cycles or a non-cancerous tumor and if she has not yet reached the menopause, then it is better that the ovaries be left in so that the normal change may take place later The ovaries are the important structures It is not necessary for women to be alarmed about their feelings or appearances if the womb alone is removed or even if the ovaries are removed after the menopause has once taken place. Too early removal of the ovaries may be important and bring about changes, but modern glandular treatment can often completely relieve all such symptoms and complaints.

In conclusion I repeat that, in youth, abnormalities of the cycle do not usually need surgery for their cure and that correction can usually be brought about by proper hygiene or medical care whereas abnormalities of the cycle before, during or after the menopause are most likely to be caused by something wrong with the organs of the body and are therefore of serious consequence. Early and thorough — and emphasis is placed on the word "thorough" — investigation is necessary at or about the time of the menopause If any abnormality of the cycle is noticed. Be alert to notice any changes from the normal! Find out what is causing them but do not be frightened! Almost all these troubles can be righted by methods known to modern medicine. Nature herself will cure many of them if the wise doctor sees to it that she is offered the best chance of so doing

* * *

Q Does stopping of the cycles in a young girl mean anything serious? Should advice be sought?

A Stoppage of the cycles is not serious except as it affects the possibility of fertility The remote cause of stoppage may be some debilitating disease such as anemia or tuberculosis, and the discovery of the real cause is therefore very important. Any striking change in the cycle should mean medical attention.

Q What about exercise before, during or after the cycle?

A. Overstrenuous exercise is better avoided but customary habits need not be changed. It is often noticed that overexercise during a cycle is apt to be followed the next time by a painful one.

Q How long do menopause symptoms last?

A. Hot flashes, dizziness and night sweats usually last from three months to several years. The severe symptoms usually vanish first but hot flashes have been known to persist for from fifteen to twenty years. Usually however at the end of a year or two most real symptoms are over

Q Is it safe to take a tub bath during the cycle?

A It is safe, but advisable not to at least for the first two days.

Q Is it safe to take any of the patent medicines for relief of pain?

A. Any of the simple sedatives such as aspirin and phenacetin are safe. It is unsafe to take any "pain killers." They may contain amidopyrine which is bad because of its danger to the blood-forming organs. Rest, abdominal heat, hot drinks and simple sedatives are best for relief of pain.

DEATH

WHITE — FRANK D WHITE, M.D., of 22 Congress Street, Milford died August 28 He was in his sixty sixth year

Born in New Brunswick, he studied at the University of New Brunswick and received his degree from the University of Vermont College of Medicine in 1897 After practicing for five years in Limestone, Maine, he spent three years studying at the Polyclinic Hospital in New York City

In 1905 he went to Milford and became a staff member of the Milford Hospital retiring four years ago because of ill health Dr White was a fellow of the Massachusetts Medical Society and the American Medical Association and was a past president of the Thurber Medical Society

His widow a daughter and two stepsons survive him.

MISCELLANY

RÉSUMÉ OF COMMUNICABLE DISEASES IN MASSACHUSETTS FOR MAY 1939

	MAY 1939	MAY 1938	FIVE YEAR AVERAGE
Anterior poliomyelitis	0	0	5
Chickenpox	41	1129	1541
Diphtheria	22	8	27
Dog bite	1447	1107	825
Dysentery, bacillary	5	20	5
German measles	90	4	2262
Gonorrhea	358	366	470
Lobar pneumonia	355	444	417
Measles	4913	1350	3576
Meningococcus meningitis	8	4	15
Mumps	679	577	973
Paratyphoid B fever	0	70	20
Scarlet fever	37	1523	1081
Syphilis	462	507	459
Tuberculosis, pulmonary	48	177	291
Tuberculosis, other forms	19	13	31
Typhoid fever	3	1	
Undulant fever	4		1
Whooping cough	633	478	770

Based on figures for preceding five years.

RARE DISEASES

Actinomycosis was reported from Springfield 1 total 1

Diphtheria was reported from Adams 1 Boston 4 Cambridge 1 Fall River 1 Lawrence, 8 Methuen 5 Shrewsbury 1 Worcester 1 total 22.

Dysentery bacillary was reported from Danvers 4 Westboro 1 total 5

Infectious encephalitis was reported from Brockton, 1 Chelsea 1 Needham 1 total 3.

Meningococcus meningitis was reported from Boston 1 Cambridge 1 Franklin 1 New Bedford, 1 Newton 1 Norwood 1 Sagamore, 1 Waltham 1 total 8

Pfeiffer bacillus meningitis was reported from Palmer 1 total 1

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It is not too uncommon to hear of normal cycles starting in girls as young as nine, but such occurrences should not be considered as normal until it has been proved that there is no trouble with a certain gland in the brain or glands in other parts of the body or that there is no tumor of the ovary A late onset may be normal, or it may mean that the organs responsible for maturity have not developed as they should have. This late onset may be quite important, and its cause should be investigated If investigation and treatment are delayed too long a girl may be deprived of ever having normal cycles and, therefore, normal reproductive function

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Sterility in young women is now a problem for intensive investigation of both husband and wife, with a very good possibility that the reason can be found and corrected Relief of sterility is sometimes impossible, due to permanent changes that have taken place in either the husband or wife. But if none of these are present, relief may be obtained in a high percentage of cases

As the end of cyclic life, or the menopause, comes on, the same irregularities take place that occur at the onset, except that usually there is no pain Too long, too short, too frequent or too infrequent cycles often occur If the change is on the side of short or infrequent cycles nothing need be done, but if the cycle is long or too frequent, an investigation should be made. The difficulty may be simple or functional, but occasionally it may be due to tumors or cancer As this is the age when cancer is most likely to start, it is well to take no chances If the abnormality is due to trouble with the glands, sometimes the new hormone or glandular preparations may be successful in relieving the symptoms If these are unsuccessful, radium or x-ray treatment will nearly always cause a rapid and satisfactory cessation of the cycles. It is in this age — just before the change — that many of our greatest mistakes are made, for women are often lulled by the idea that the difficulty is simply due to a difference occurring at the end of their cycles An abnormality in cycle or any change in personal hygiene should — after the age of forty — be considered as serious until proved otherwise. By following that rule many disasters can be prevented and many cures of a dread disease can be accomplished

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SEPTEMBER 15–28 — Pan-Pacific Surgical Association. Page 863 issue of November 24
SEPTEMBER 19 — Lawrence Cancer Clinic. Page 400.
SEPTEMBER 29–30 — New England Surgical Society Beverly and Salem.
OCTOBER 23–NOVEMBER 3 — New York Academy of Medicine. Page 977 issue of June 8
FALL, 1939 — Temperature Symposium. Page 218 issue of February 2.
DECEMBER 2 — American Board of Obstetrics nd Gynecology Page 1019 issue of June 15
JANUARY 6, JUNE 8–11 1940 — American Board of Obstetrics and Gynecology. Page 160 issue of July 27
MARCH 7–9 1940 — The New England Hospital Association. Hotel Statler Boston.
MAY 14 1940 — Pharmacopoeial Convention. Page 894 issue of May 25.
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BOOKS RECEIVED FOR REVIEW

The Social Function of Science J D Bernal. 482 pp New York The Macmillan Co., 1939 $3.50

Do You Want to Become a Doctor? Morris Fishbein. 176 pp. New York Frederick A. Stokes Co., 1939 $1.50

Functional Disorders of the Foot Their diagnosis and treatment Frank D Dickson and Rex L. Diveley 305 pp. Philadelphia Montreal and London J B. Lippincott Co., 1939 $5.00

The Art of Anaesthesia Paluel J Flagg Sixth edition revised. 491 pp Philadelphia London and Montreal J B. Lippincott Co., 1939 $6.00

District Health Development Building program as related to the master plan for the City of New York Department of Health City of New York. 53 pp New York Neighborhood Health Development, Inc., 1939 $1.00.

Housing Yearbook 1939 Edited by Coleman Woodbury 240 pp. Chicago National Association of Housing Officials, 1939 $3.00

New and Nonofficial Remedies 1939 Containing descriptions of the articles which stand accepted by the Council on Pharmacy and Chemistry of the American Medical Association on January 1 1939 617 pp. Chicago American Medical Association 1939 $1.50

Annual Reprint of the Reports of the Council on Pharmacy and Chemistry of the American Medical Association for 1938 With the comments that have appeared in the Journal. 123 pp Chicago American Medical Association, 1939 $1.00

The Story of a Baby Marie H. Ets. 63 pp New York The Viking Press, 1939 $2.50

Operative Orthopedics Willis C. Campbell. 1154 pp. St. Louis The C. V Mosby Co. 1939 $12.50

Peripheral Vascular Diseases Diagnosis and treatment William S Collens and Nathan D Wilensky 243 pp. Springfield, Illinois, and Baltimore. Charles C Thomas, 1939 $4.50

Cardiovascular Diseases Their diagnosis and treatment David Scherf and Linn J Boyd. 458 pp. St. Louis The C. V Mosby Co., 1939 $6.25

The Poison Trail William F Boos. 380 pp. Boston and New York Hale, Cushman and Flint, 1939 $3.00.

Pneumonia With special reference to pneumococcus lobar pneumonia Roderick Heffron 1086 pp New York The Commonwealth Fund 1939 $4.50

The Rockefeller Foundation Annual report 1938 515 pp. New York The Rockefeller Foundation 1939

The Surgery of Pain René Leriche Translated and edited by Archibald Young 512 pp Baltimore The Williams & Wilkins Co., 1939 $6.50

Modern Clinical Psychiatry Arthur P Noyes. Second edition. 570 pp Philadelphia and London W B Saunders Co., 1939 $5.00

Studies from the Rockefeller Institute for Medical Research Vol. 112. 600 pp New York The Rockefeller Institute for Medical Research 1939 $2.00

Aids to Dermatology and Venereal Disease Robert M B. Mackenna. Second edition. 284 pp Baltimore The Williams & Wilkins Co., 1939 $1.25

Sterility and Impaired Fertility Pathogenesis diagnosis and treatment Cedric Lane Roberts, Albert Sharman, Kenneth Walker and B. P Wiesner 419 pp. New York Paul B. Hoeber Inc., 1939 $5.50

Nutrition and Physical Degeneration A comparison of primitive and modern diets and their effects Weston A. Price. 431 pp New York and London Paul B Hoeber Inc., 1939 $5.00

Clinical Diagnosis by Laboratory Methods A working manual of clinical pathology James C. Todd and Arthur H. Sanford. Ninth edition 841 pp. Philadelphia and London W B Saunders Co., 1939 $6.00

Symposium on the Synapse Herbert S Gasser Joseph Erlanger Detlev W Bronk, Rafael L. De Nó and Alexander Forbes. 474 pp. Springfield, Illinois, and Baltimore Charles C Thomas 1939 $2.00

BOOK REVIEWS

Chronic Diseases of the Abdomen A diagnostic system C. Jennings Marshall 247 pp. Boston Little, Brown & Co., 1939 $6.00

This book starts badly but improves as it goes along The verbosity and indirection of the author's introduction might frighten one off but subsequently the book becomes as readable as a diagnostic system can be. It is carefully planned, is inclusive enough for the practitioner and student and is a handy check list of diagnostic staples for the surgeon

On the whole it is sound. The reviewer disagrees with certain parts. For example, many of us believe that there may be something in chronic appendicitis. The book's analysis of cholecystic indigestion helps the neophyte less than would a vivid description of an attack of colic. In eleven pages on backache there are but two noncommittal lines on nucleus pulposus Minor inaccuracies are found in the discussion of diverticulitis. The views on extrinsic ureteral obstruction are a bit conservative, at least according to the standards of most urologists.

The most important thing about the book is the subject, for which there has never been an authoritative text. Popularity is a safe prediction despite a charge which is high for the size of the book.

Varicose Veins Alton Ochsner and Howard Mahorner 147 pp. St. Louis The C. V Mosby Co., 1939 $3.00.

This little book is in the main an amplification of the authors' recent papers dealing with the study of varicose veins and their treatment by combined division and injection. In an introductory chapter which is particularly interesting because of its illustrations depicting earlier surgical procedures they discuss the historical aspects of the subject. Of the succeeding brief chapters dealing with anatomy etiology pathology physiology and clinical aspects, the best is the one which describes the anatomic features of the venous system of the lower limbs. The various veins which drain into the upper great saphenous vein and into the femoral vein just proximal to it are described with unusual accuracy and completeness —particularly in relation to high division and postoperative recurrences. One notes by contrast the brief account

of the veins which communicate between the superficial and deep venous systems of the calves Indeed, in the entire book, the authors pay very little attention to these communicating veins, devoting themselves especially to the corresponding vessels of the thigh Little notice is taken, either, of the abundance and stability of the deep veins as compared with the superficial ones

The chapter devoted to examination of the varicose-vein patient constitutes the feature of the work. In this, the tests for evaluating the venous circulation are very fully described and illustrated, more particularly the authors "comparative tourniquet test," based upon the Perthes and Brodie–Trendelenburg tests It will be noticed that they give Sir Benjamin Brodie credit for anticipating by some forty years Trendelenburg's observation of the reflux of blood down the varicose vein Upon the comparative tourniquet test, which reveals the relation of the varicose veins to the deep and communicating veins of the thigh, the authors base their determination of what further division of varicose veins is needed over and above their routine resection at the junction of the great saphenous and the femoral veins Their plan is intended to make the least possible surgery secure the greatest possible safety and permanence The operative steps are well illustrated, the method of injecting the preferred sclerosing soaps are well described and the aftertreatment is given adequate attention

The book will undoubtedly be of great value to those desiring to make the most thorough study of varix and treat it in an ideal way However, many will find the tests described elaborate and difficult to carry out with accuracy Indeed, it is perhaps a pity that, with their great knowledge of the subject, the authors have omitted some commonplace observations and deductions, such as the meaning of cyanosis or its absence in estimating the state of the deep veins They give almost no time to thrombosis in the varicose vein, its natural course and treatment, and they say nothing of the management of the not infrequent troublesome secondary thromboses which may wander down into the calf when high division and injection alone have been performed

The material is attractively presented, with the vigor and intelligence for which the authors are well known

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Clinical Pathological Gynecology J Thornwell Witherspoon 400 pp Philadelphia Lea & Febiger, 1939 $6.50

This book is divided into twenty seven chapters The anatomical classification is used throughout. The general plan followed under each organ covers infections, tumors, histopathology and the treatment of each lesion.

Under Sections 5 and 6 the hormones are discussed Considerable material is condensed in these two sections, and they give a very good idea of our knowledge of the hormones The clinical application of the hormonal products, as we understand them, is also well given and should be clear to the medical student and clinician who have had no great laboratory experience.

The photomicrographs are original and well selected, and they satisfactorily illustrate each condition Most of the gross anatomical descriptions are reproduced from other authors and have also been well chosen.

The section on cancer of the uterus should be of distinct advantage to the medical student as it is well discussed and illustrated in a limited space. Menstruation and its disorders cover 38 pages, and the author emphasizes the relation of the female sex hormones as they are applied to the treatment of these conditions This portion of the book is exceptionally good.

It is stated under abortion that packing of the cervix and vagina is most easily accomplished with the patient in the knee-chest position, the Sims position being the second choice A large number of obstetricians and gynecologists would not agree with this statement since most of them place the patient in the lithotomy position and use a weighted speculum in performing uterovaginal tamponade. Emphasis is rightly placed on the fact that the curet is a dangerous instrument in any pregnant uterus

The treatment of hydatid mole is given as emptying the uterus from below No mention is made of abdominal hysterotomy, which has now become an accepted procedure in many clinics

Classification of the tumors of the ovary is based on the histogenesis of these tumors with but few exceptions It is simple and should be understandable to the medical student. Under pseudomucinous cystadenoma the author states that blind tapping of these cysts is a dangerous procedure since, in the presence of cancer, malignant cells may be implanted on the peritoneum However, in the same chapter he advises, in the presence of large tumors which may require an incision from the symphysis to the xiphoid, making a small incision, rather than a long one, before tapping the cyst under direct vision. Many surgeons believe that tapping any cyst, even under direct vision, is a dangerous procedure because of the possibility of spilling malignant cells in the peritoneal cavity and that an incision as long as one from the symphysis to the xiphoid will heal satisfactorily and is much safer than the tapping of a cyst, as it is impossible to say whether or not cancer exists in the interior of the tumor

On the whole the book is clearly written, with the material well presented, and should prove of marked value to the medical student and general practitioner—probably to a less extent to the specialist. While a great deal of the subject matter may be found in the large text books, it is difficult to find any volume which condenses it and makes it as readily accessible as has been done in this book

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Man and His Body Howard W Haggard. 594 pp. New York and London Harper & Brothers Publishers, 1938 $4 00

The layman who nowadays fails to learn something of the structure of his body and its behavior in health and disease has no one but himself to blame. If there were no other book than this of Haggard's available to him, he could acquire all, more than all, that he need know along this line. For this is an up-to-date, thoroughly trustworthy treatise of most extraordinary range It is not confined to the setting forth of the essential facts as to structure, function, hygiene and development, many of the diseases to which the flesh is heir are discussed, together with matters of diet, exercise, posture, the effects of alcohol and drugs, allergy, endocrinology, sexual activities, climate and air-conditioning, and the principles of heredity There is even an appendix on medical terminology

It is important to add that the presentation is well adapted to the average intelligent reader, even though the latter has had no grounding in the subjects treated Yet it is sufficiently scientific in matter and style to serve as an excellent treatise for the medical student, at least in the preclinical phase of his education It is a book which may be cordially recommended and which deserves, indeed, to have a wide circulation.

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PROTHROMBIN AND VITAMIN K THERAPY*

JOHN D STEWART, M.D† AND G MARGARET ROURKE, B.A

BOSTON

MUCH remains to be learned about the mechanism of blood clotting, and two fundamental questions still not conclusively settled are the extent to which clotting is an enzyme reaction, and the nature of the physiologic anticoagulant. Nevertheless, there is now general agreement that at least five substances take part in normal clotting The first phase consists in the interaction of ionized calcium, a tissue or platelet derivative called thromboplastin, and prothrombin which is probably part of the globulin fraction of plasma protein By this reaction thrombin is formed, which in the second phase of clotting converts fibrinogen into fibrin

Since the discovery[1] of vitamin K in 1935 and subsequent demonstration[2-6] of its importance in the formation of prothrombin, four methods have come into use for the measurement of prothrombin In 1935 Quick[7] improved Howell's[8] method of determining the clotting time of recalcified plasma by adding an excess of thromboplastin before recalcification From the clotting time a prothrombin value for the unknown in percentage of normal was obtained by using a composite curve, constructed by determining the clotting time and prothrombin ratio in diluted or adsorbed plasma In 1936 Warner, Brinkhous and Smith[9] introduced the two stage titration method involving the preliminary conversion of prothrombin to thrombin In defibrinated plasma with subsequent serial dilution and incubation before addition of standardized fibrinogen Dam and Glavind[10] using the principle proposed by Fischer[11] determine coagulability by comparing the amount of thromboplastin required to clot the unknown heparinized plasma in a standard time interval with that required by normal plasma Recently Ziffren Owen, Hoffman and Smith[12] have proposed a bedside test of clotting activity In this test, which is now under study, the clotting time of freshly drawn blood is determined after immediate addition of thromboplastin, no anticoagulant being used The clotting time of control normal blood is similarly determined, and the clotting activity of the unknown is expressed as percentage of normal

Of these tests probably only the two stage method of Warner, Brinkhous and Smith can be said to measure prothrombin concentration The other methods measure "not prothrombin alone, but the summation of several variables"[13] Such nonspecific measurements of clotting activity, however, may be of considerable clinical usefulness in controlling vitamin K therapy even if unsuitable for investigative purposes

The two-stage measurement of prothrombin concentration according to Warner, Brinkhous and Smith may be briefly described as follows Oxalated plasma is defibrinated by addition of purified thrombin solution and allowed to stand thirty minutes for inactivation of excess thrombin Varying dilutions are then incubated for varying intervals with standardized thromboplastin, calcium chloride and acacia solutions Fibrinogen is then added and the clotting time is determined A normal control is titrated in the same way The results may be expressed in percentage of normal or in terms of arbitrary units of prothrombin depending on the dilutions yielding in clotting mixture fifteen seconds after optimal incubation Physicochemical factors which must be controlled in the determination are temperature, pH dilution, electrolyte concentration and colloid concentration As is apparent the method is based on the existence of a quantitative relation between prothrombin concentration and clotting time under set conditions.

Experimental data bearing on the determination of prothrombin by the two-stage technic will now be presented

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In Chart 1 is shown the effect of varying the incubation period of the mixture of prothrombin, calcium chloride and thromboplastin before the addition of fibrinogen, all other factors

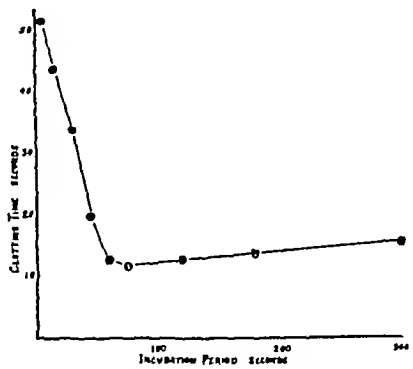

CHART 1 *Effect of Varying Incubation Period on Thrombin Formation at 82.0°F*

being kept constant The rapidity of clotting increases sharply until an optimal incubation period, in this experiment seventy seconds, is reached Longer incubation diminishes the yield of thrombin through inactivation The importance of controlling the incubation period is evident

In the experiment from which data shown in Chart 2 were secured the relation between prothrombin concentration and clotting time under standard conditions was studied Normal oxalated plasma was defibrinated by means of thrombin solution and divided into two portions From one the prothrombin was adsorbed by magnesium hydroxide, the pH being subsequently adjusted to 7.4 with phenol red as indicator [13] By mixing the two fluids in varying proportions prothrombin concentrations from 10 to 100 per cent were obtained, the other factors being unchanged The clotting time for each dilution was determined under the usual standard conditions Curves A1 and A2 are experimental curves constructed with data so obtained, while curve B is a composite of nine such curves Mathematically, curve B is found

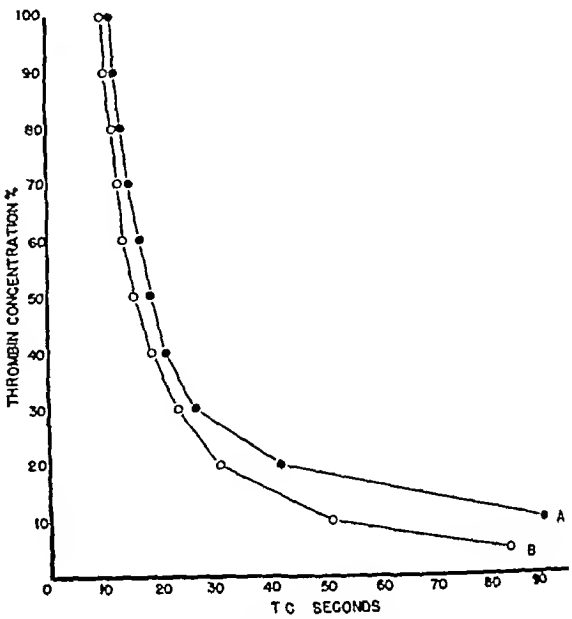

CHART 3 *Thrombin–Fibrinogen Reaction at 79.0°*

This shows the effect of varying the thrombin concentration Curve A experimental Curve B theoretical

to be a power curve with the type form $y = kx^{-n}$, and on inserting values the formula comes $y = 26352\,x^{-1.411}$ It is clear that a sim

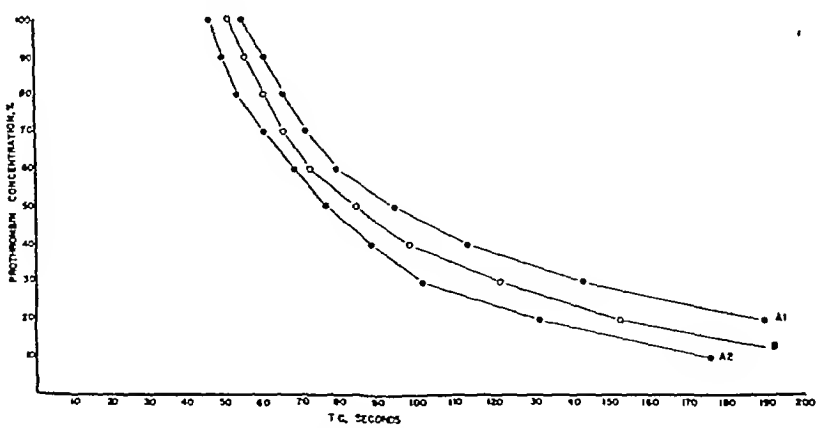

CHART 2 *Relation between Prothrombin Concentration and Clotting Time*

Curve A1 *incubation period 5 seconds at 84.4°F Curve* A2 *incubation period 45 seconds at 85.0°F Curve* B *composite* ($y=26352x^{-1.411}$)

linear relation between prothrombin concentrati and clotting time does not exist under the con tions of the experiment, the incubation period the mixture being kept constant

In the experiment on which Chart 3 is bas the relation between clotting time and thromb

concentration was studied in a different way. A standard highly active purified thrombin solution,[14] containing 1 mg. of thrombin in 4 cc. of 0.9 per cent sodium chloride solution, was diluted with 0.9 per cent sodium chloride solution so as to give thrombin concentrations from 10 to 100 per cent, in terms of the original solution. The clotting time of normal oxalated plasma was then determined, using a standard volume of each of the thrombin solutions. Other conditions a normal control are determined under standard identical conditions of dilution and incubation before addition of fibrinogen. The control value is taken as 100 per cent and determines the curve to be used in reading off on the ordinate scale the prothrombin percentage for the unknown. The same results can be obtained by substituting values in the parent equation and solving for y and k.

Prothrombin values found in the study of normal and abnormal individuals will now be presented

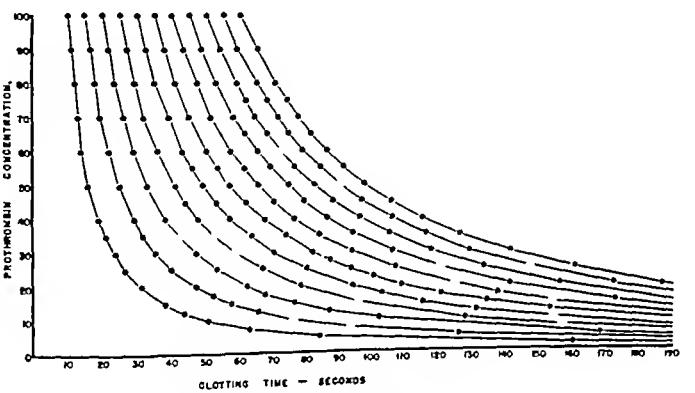

CHART 4. *Theoretical Curves Giving the Quantitative Relations between Prothrombin Concentration and Clotting Time*

were kept constant. Curve A was constructed with data so obtained. Curve B was calculated by means of the formula previously shown in Chart 2, a slightly different interval being used in the calculation so as not to obscure the comparison.

In Chart 4 is shown a series of theoretical curves calculated for various intervals using the power formula derived from composite curve (B) in Chart 2. Such a chart is of use in prothrombin

TABLE 1. *Constancy of Level of Plasma Prothrombin in Same Normal Control (R. M. G.) Not Fasting*

Date	Vc	Temperature	Plasma Prothrombin
	%	(F.)	%
12/7	42.—	Room	98.1
12/10	42.6	Room	99.8
12/14	45.5	Room	98.1
12/16	43.2	Room	98.1
12/23	42.6	—.0	101.6
12/29	42.9	—8.8	98.1
12/31	42.9	81.0	104.1
1/2	41.8	82.4	102.5

Vc (in this and subsequent tables) red-cell hematocrit.

determination according to the two-stage technic as follows. The clotting times of the unknown and

In Table 2 are set forth data bearing on the constancy of plasma prothrombin in a normal person over a period of time. The values are expressed in percentage of the average, and show a variation of 6 per cent during the period of study. In Table 2 is shown the extent of variation in plasma

TABLE 2. *Plasma Prothrombin in Normal Adults*

Case	Sex	Vc	Plasma Prothrombin Immediately after Clotting	Prothrombin after standing 4 hrs. at 4° C.
		%	%	%
			(1)	(2)
J. S.	M	48.4	93.0	3.0
S. M.	M	50.0	96.5	71.4
E. P.	F	45.2	99.2	72.7
R. M.	F	43.7	97.9	8.4
G. R.	F	45.7	102.0	81.3
A. L.	M	47.6	99.1	78.8
R. A.	M	51.1	100.3	71.9

prothrombin in a group of healthy young adults, studied in the same morning. In the last column are shown prothrombin values in the same samples of plasma after standing twenty four hours at 41.0°F., the reduction in prothrombin averaged 23.5 per cent

Table 3 shows prothrombin and red-cell hematocrit values in 6 patients with obstructive jaundice at the time of pathologic bleeding In no case had there been adequate treatment with the mixture of vitamin K and cholic acid, and in every case the prothrombin concentration was less than 40 per cent of normal In a case of neglected obstructive jaundice not included in the table a prothrombin value of 98 per cent was found at the time of active pathologic bleeding, the lowest value we have seen It is in these cases that vitamin K–cholic acid therapy is of dramatic and life-saving effect, as the bleeding can be controlled within a few hours

TABLE 3 *Massive Hemorrhage Due to Prothrombin Deficiency in Obstructive Jaundice (No Previous Treatment with Vitamin K or Inadequate Treatment)*

	Site of Bleeding	Vc	Plasma Prothrombin
		%	%
T P H	Urinary and biliary tracts	28 5	26 0
J R. B	Gastrointestinal tract	23 0	13 0
M L. K	Endometrium nasopharynx	46 9	25 0
H C K	Gastrointestinal tract	30 5	36.5
R G	Nasopharynx mouth gums	37 5	24 1
M Y	Gastrointestinal tract	34 9	31 5

Chart 5 illustrates the typical preoperative response of prothrombin concentration to vitamin

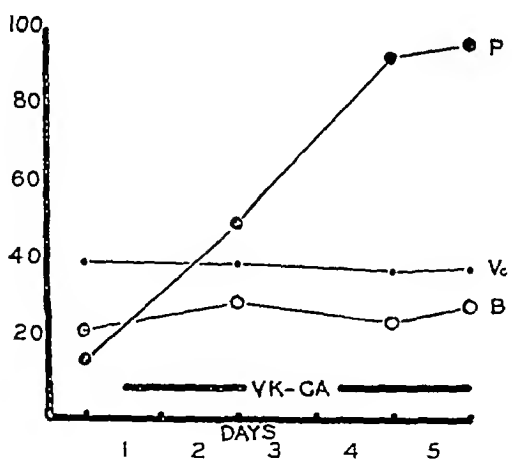

CHART 5 *Preoperative Prothrombin Response to Vitamin K Therapy in a Case (E G B) of Obstructive Jaundice*

P *prothrombin in per cent of normal* Vc *hematocrit in per cent* B *plasma bilirubin in mg per 100 cc* VK-CA *time of administration of a mixture of vitamin K and cholic acid*

K–cholic acid therapy For two months the patient had been severely jaundiced from carcinoma of the head of the pancreas Such patients should receive proper amounts of vitamin K and bile salts for three to five days before operation and for five to ten days after operation Prothrombin determinations are carried out every two or three days in order to control this specific therapy

That abnormal bleeding may occur in such diseases as thrombocytopenic purpura and hemophilia without prothrombin deficiency is brought out in Table 4 Vitamin K therapy would not be indicated in these cases

In Table 5 are listed prothrombin values in patients with miscellaneous diseases Reduction in prothrombin may occur in various conditions, such as chronic sepsis, malnutrition and avitaminosis, chronic loss of blood, cirrhosis of the liver, chronic peptic ulcer and cachexia of malig disease As a rule the reduction is moderate probably not of symptomatic importance However, under further depressing circumstances, as loss of blood, infection and surgical operat conceivably the prothrombin concentration m be further reduced to the point of disabling

TABLE 4 *Abnormal Bleeding Not Due to Prothrombin Deficiency*

	Diagnosis	Site of Bleeding	Vc	Pl P thro
			%	
A S	Hemophilia	Arm laceration	26 2	9
C S	Hemophilia	Spinal cord	40 6	8
R S	Hemophilia	Thigh	38.5	8
L F	Aplastic anemia	Mouth skin	22 2	10
R O	Thrombocytopenic purpura	Mouth skin	36 4	9
C L	Thrombocytopenic purpura	Nasopharynx skin	43.3	8
A K	Polycythemia vera	Biopsy wound	70 9	10
F K.	Retinal hemorrhage	Retina	50 0	9
R R	Retinal hemorrhage	Retina	43 7	10

TABLE 5 *Plasma Prothrombin in Various Disease*

	Diagnosis	Vc	Pl P thro
		%	
T M	Alcoholic cirrhosis	42 5	6
D R S	Chronic ulcerative colitis	27 6	7
H E M	Chronic ulcerative colitis	30 7	8
O M S	Chronic lung abscess	35.9	6
E. K	Cancer of the rectum malnutrition	31.2	7
J J	Catarrhal jaundice	44 6	8
R S	Catarrhal jaundice	41 7	7
H B C	Catarrhal jaundice gastric ulcer	40 9	8
M J C.	Catarrhal jaundice pulmonary tuberculosis	34 6	6
E. M	Catarrhal jaundice	48.5	7
J K	Catarrhal jaundice	51 5	7
J F	Catarrhal jaundice	49 2	8
E B	Chronic duodenal ulcer	39 2	8
A C H	Melanoma of neck	41 4	7
J N	Gastrojejunal ulcer	32 8	7
K. W	Toxic thyroid (postoperative) avitaminosis	35 9	8

clotting mechanism The usefulness of vitamin therapy in this group of cases is an interest field for study Broadly considered, hemorrh depends on two factors, extent of tissue injury effectiveness of the complex coagulative mech ism When the power to form an effective is lowered, bleeding occurs with mild or e

injury From this point of view, it would desirable to maintain plasma prothrombin

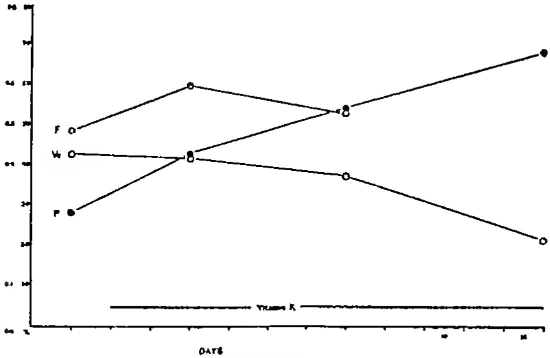

CHART 6. *Effect of Vitamin K on Plasma Prothrombin in a Case (S J) of Chronic Ulcerative Colitis*

P *prothrombin in per cent of normal* F *fibrinogen in gm per 100 cc* Vc *hematocrit in per cent* VITAMIN K *time of administration of a mixture of vitamin K and cholic acid*

tration as nearly normal as possible in pa with lesions exposed to trauma and likely d, such as peptic ulcer, esophageal varices, : ulcerative colitis, pulmonary tuberculosis ng abscess

hart 6 is shown the elevation in prothrom vel occurring after administration of vita K–cholic acid mixture to a patient with : ulcerative colitis. With the rise in pro- 'in concentration a distinct decrease in g from the colon occurred

SUMMARY

irombin levels can be accurately and prac determined

ie normal individual, prothrombin concen fluctuates but little

bstructive jaundice, the prothrombin level : dangerously reduced, a vitamin K–cholic ixture taken by mouth is dramatically ef in restoring it to normal

such hemorrhagic states as hemophilia, : anemia and thrombocytopenic purpura thrombin concentration is not reduced and 1 K therapy is not indicated

The prothrombin level may be reduced in a variety of diseases, such as chronic infection, peptic ulcer, cirrhosis of the liver, chronic ulcerative colitis, malnutrition and cachexia, vitamin K therapy may be of value in these conditions, but further study of the question is needed

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THE USE OF COBRA VENOM IN THE RELIEF OF INTRACTABLE PAIN*

ROBERT N RUTHERFORD, M D †

BROOKLINE, MASSACHUSETTS

IN 1929 Dr Adolphe Monaelesser of New York City was told of a Cuban leper who was relieved of severe pain in his arm after having been bitten by a poisonous tropical spider This episode led Monaelesser to suggest to Calmette, of the Pasteur Institute, that some animal poisons might be of value for the relief of intractable pain, and the former, together with two French physicians, began such a study, selecting the venom of the cobra because of its richness in neurotoxins Ultimately, from this work, the Pasteur Institute[1] reported on the use of small and safe dosages of the venom in the relief of severe pain, particularly in cases of terminal cancer This work has been clinically tested and widely accepted on the Continent, but it was not until 1935 that Macht[2] in this country began to write of its use He has fully investigated the pharmacology and toxicology of cobra venom, has prepared and assayed a safe and sterile solution for therapeutic human use and has reported[3] a series of 200 cases of severe pain treated with this drug

Because the care of the patient with advanced cancer is so perplexing a problem, particularly for patients who cannot afford institutional care or for whom opportunities to obtain it are lacking, this seemed an ideal treatment We are only too familiar with the problem of a pain-wracked patient in a home where loving care cannot compensate for constant pain, and where the family physician cannot administer opiates every three hours by the clock

MODE OF ACTION

The venom of various members of the cobra species was tried by Macht, being transported in the form of dried scales The active principle of the many venoms was the same, although its chemical nature is still in doubt, and seemed to be a "neurotoxin" Macht[4] investigated the common belief about the action of the venom It had been thought that the numbing and paralysis of a human member struck by the cobra was due to a local anesthetic effect Macht experimentally showed this to be due to the protoplasmic poisoning action of overwhelming amounts of the venom concentrated in one place When minute quantities were used therapeutically in very dilute concentrations, there was no demonstrable local anesthetic action Instead, all his data suggested that the action was due to a central analgesia, specifically in the pain areas of the cerebrum, much as is the action of opium and its alkaloids, chiefly morphine

It was also demonstrated that cobra venom and the opium alkaloids differed in "the fourth dimension of pharmacodynamics," as Macht[5] calls the time element involved in all pharmacologic action As is commonly known, morphine exerts its analgesic influence within a very short time, usually beginning in ten to twenty minutes, and its action persists for several hours Venom manifests its action much more slowly, as will be seen in this series of cases (Cases 4 and 11) as well as in Macht's[3] series Daily injections of the venom for at least two days and usually three or four are required before the full effect becomes apparent Even then, some of the patients report partial relief at the end of the first week, only to have complete relief as late as three weeks after the injections were started (Case 12) Once induced, the analgesia persists much longer than in the case of morphine[6] In this series, the action lasted for two, three and sometimes four days (Cases 1 and 11)

One may liken the action of cobra venom to that of digitalis The patient undergoes a period of saturation for three or four days After this the maintenance dose is dictated by the physiologic needs of the patient, that is, the amount and character of the pain Some patients require several injections daily, whereas others need only one injection in two or three days This matter is one of individual requirement, just as digitalis is adjusted to the individual cardiac patient

Cicardo[7] suggests a probable increase in the pain threshold of the peripheral nerve mechanism Clinically, there also seems to be an anticonvulsant property of the venom, as seen in cases of acute Parkinsonism with painful contractures[8] There is one other property which may be secondary to the relief of pain — a distinct improvement in the psychiatric outlook is characteristic Certain it is that patients maintain their courage, as well as their nutrition, under this regime much better than under the opiates or barbiturates

To date there has been no evidence of addic

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tion or of increased tolerance to the drug It can be stopped and started at will, the dose may be decreased or increased as the occasion requires In this series, once the maintenance dose was found it was easier to give supplementary medication of some of the quick acting analgesics for temporary increase of pain, such as that due to sudden emotional crises, intercurrent infections or surgical procedures attempted during this period This series has been followed for only four months, but it has been the experience of the early investigators[6, 7, 8] that there is no increased tolerance after months or even several years of administration of the drug The cases in this series are almost all those of terminal cancer, and 3 deaths have already occurred, so that duration is of necessity shorter than that in a series of so-called chronic diseases We have not been fortunate enough to have any cases of morphine addiction to treat, although such have been reported[3] The transition is said to be quite easy and without any of the usual withdrawal symptoms This we have not verified

FORM OF ADMINISTRATION AND DOSAGE

Cobra venom is distributed in 1-cc. glass ampules containing 5 mouse units of cobra venom A mouse unit is defined as that quantity of cobra venom solution required to kill a 22-gm white mouse within eighteen hours after intraperitoneal injection This dose is eminently safe. In this series, despite much larger doses, not a single side reaction or untoward reaction was encountered which could be ascribed to the venom

It is important that the drug be given intramuscularly, for if it is given subcutaneously it will cause some local redness and tenderness for several days. There may be local tenderness when it is given intramuscularly but this disappears after the first few weeks of injection

At the beginning of the series, treatment was started, as suggested by Macht,[8] with an injection of 0.5 cc. (2½ mouse units), followed by daily injections of 1.0 cc. (5 mouse units) * Continental therapeutists give much larger doses[10] After we became familiar with the drug, we endeavored to adjust the initial dose to the requirements of the patient, beginning in some cases with 2.0 or 3.0 cc (10 or 15 mouse units), and continuing the dosage at that level for four to six days or until complete relief was obtained, then considerably lowering the dose to a maintenance level No untoward reactions were encountered Whether the treatment was started with a large or with a small dose, the time of the appearance of relief seemed to be the same, usually the third or fourth day after administration had been begun The usual maintenance dosage was 1.0 cc (5 mouse units) every day or every other day

Because most of our patients were outpatient cases, and because of the difficulty of home visits for the injections, they were brought into the hospital for an average stay of one week, during which time they were saturated with the drug and their maintenance dose was tentatively determined The cases were followed at two- or three week intervals through the Outpatient Department, and dosage was regulated by symptoms The patients were encouraged to learn to give themselves the injections, just as diabetic patients administer their own insulin and most of them were able to do so They were also encouraged to adjust their own dosage as their requirements demanded. This they did well

CLINICAL EXPERIENCE

Altogether 17 cases were treated in this series We have endeavored to present all the essential facts concerning pathology and treatment Pain is at best a subjective factor which is most difficult to measure by any one standard We tried to relieve pain although effort to cure the fundamental disorders was carried on at the same time The patients were told only that they were to get injections of a serum which might help their pain Daily they were asked to estimate the amount of their pain, and scrupulous effort to avoid any form of suggestion was observed In the patients with severe pain during the period before the venom began its action, we thought it kinder to keep them free from pain by the usual methods but estimated their relief by the diminishing amount of the analgesics which they required

CASE REPORTS

Case 1 *(F.H.H. 36418)* Mrs. C., a 47 year-old housewife, 3 years before admission, had had a Wertheim operation for carcinoma of the cervical stump following x-ray and radium treatment. She required bilateral ureterostomy and ultimately one kidney was removed for chronic infection. She had an indwelling ureteral catheter in her remaining ureter and had chronic infection in that ureter and the kidney pelvis. The presenting complaint was severe, colicky ureteral pain from mechanical irritation of the catheter whenever she moved plus the chronic infection in the kidney On entry the patient was able only to lie rigidly in bed without movement in order to prevent ureteral spasm. Previous medication included luminal codeine and aspirin up to every hour without relief Cobra venom treatment was begun with ½ ampule the 1st day and 1 ampule thereafter On the 2nd day the patient noted a real improvement. On the 4th day she was almost pain free. After the 5th day she was given 2 ampules daily and was completely relieved of pain. She was able to sleep the whole night through in any

*The cobra venom was furnished through the courtesy of Dr. David I. Macht, of Baltimore, and of Hynson, Westcott and Dunning, of this city

position, make her bed and walk three blocks She was discharged on the 8th day on 1 ampule every other day, without other medication

The patient was followed at 2 week intervals for 4 months She did a half day's housework, walked with swinging arms and once danced On 1 ampule every other day she was entirely comfortable, but with longer intervals some of the pain returned She gained 13 pounds

CASE 2 *(F.H.W. 27729)* Mrs H., a 64 year-old American housewife, entered the hospital in 1937 for treatment of severe interstitial cystitis (Hunner's ulcer) She complained of constant burning pain, suprapubic when the bladder was full, deep in the pelvis when it was empty She voided every 15 minutes during the day, every hour during the night, and was utterly miserable, with no relief on any medication. The bladder capacity varied from 150 to 200 cc., with symptoms relieved for a short time if the bladder was dilated under anesthesia Cobra venom was given, ½ ampule the 1st day and 1 ampule daily thereafter On the 4th day she estimated that 75 per cent of her pain had gone. On discharge on the 8th day, no greater relief was experienced, this degree of relief was maintained on 1 ampule every other day The bladder capacity was unchanged.

The patient was seen at 2 week intervals for 4 months She was able to sleep 3 hours at a stretch at night, had some pain deep in the pelvis, but it was 60 per cent less than before She could do half a day's work without difficulty, and walked for 30 minutes without discomfort. She voided only once in 1½ hours The bladder capacity remained unchanged, although she was routinely dilated to maintain her capacity When asked whether she wished to discontinue the venom she vigorously refused Increasing the dose had no additional effect.

CASE 3 *(F.H.W. 28613)* Mrs S., a 58-year-old, American housewife, entered the hospital in 1937 for treatment of severe interstitial cystitis of 2 years' duration She complained of constant deep pelvic pain, and severe suprapubic pain when the bladder was full She voided every 15 or 20 minutes during the day and five or six times at night, and slept no more than an hour at a time Stepping up on a curb caused a severe spasm of pain which doubled her up, and forced her to sit still for 5 minutes She had tried codeine, barbiturates and salicylates, all without relief Cobra venom was started with ½ ampule the 1st day and 1 ampule daily thereafter The patient was discharged on the 8th hospital day on 1 ampule every other day The bladder capacity was still around 220 cc. On the 4th day after discharge the patient felt relieved of 80 per cent of her pain, slept 4 hours at a stretch at night and voided one or two times at night, and every 1½ hours during the day She could walk vigorously with swinging arms, and step up on curbstones without difficulty

In a 2-week follow up her progress was maintained on 1 ampule every other day A 4 week follow-up and subsequent ones up to 4 months showed that she was only 60 per cent relieved but was doing some work about the house. The bladder capacity was steadily diminishing, and frequent dilatations under anesthesia were done. Increasing the dose of cobra venom seemed to give no additional relief She refused to discontinue the injections

CASE 4 *(F.H.W. 29432)* Mrs L., a 36-year-old, Negro housewife, 1 year before admission had surgical extirpation of a papillary cystadenoma of the ovary with subsequent deep radiation She entered the hospital with ascites from carcinomatosis, with the liver down to the iliac crest and with multiple areas of subacute intestinal obstruction She had a constant, agonizing low backache, spasms of bowel colic, intermittent vomiting and constipation Previous medication had included codeine and aspirin every 2 or 3 hours at home. She was bedridden at home from weakness and cachexia Cobra venom was started on 1 ampule daily, which was continued for the 10 days of her hospital stay After the 3rd day she required no other medication Daily enemas, mineral oil, belladonna and a low-residue diet relieved much of her bowel symptomatology On the 5th day the patient sat up and walked a little thereafter, but with difficulty She was discharged on the 10th day on 1 ampule every other day

She had no pain except some dull abdominal cramps at the worst of her attacks The patient died at home of complete intestinal obstruction in the 4th week of treatment.

CASE 5 *(F.H.W. 29603)* Mrs B., a 49 year-old, Negro housewife, 1 year before admission had radium and x-radiation for carcinoma of the cervix. No surgery was undertaken, the pelvis was solid with carcinoma She complained of anorexia, intermittent vomiting, constant low back pain and constipation and was bedridden Previous medication had consisted of codeine and aspirin, four to twelve times daily, without complete relief. Cobra venom treatment was begun with 1 ampule daily for 2 days, then 2 ampules daily for 3 days, thereafter 1 ampule daily The patient was discharged on the 8th hospital day with 40 or 50 per cent of the pain relieved

At home she soon returned to codeine, still without complete relief of pain On some days relief was complete, while on others no amount of any medication would give complete relief

The patient re-entered the hospital 3 weeks after her discharge Intrathecal alcohol injection was performed with complete relief of pain, but the patient lapsed into coma on the 4th day and died of uremia from ureteral obstruction and pelvic peritonitis due to malignant perforation into the bladder and rectum

CASE 6 *(F.H.W. 28753)* Mrs C., a 48-year-old, Italian housewife, had radium and x-radiation for carcinoma of the cervix 1 year before admission She entered the hospital complaining of constant strangury, steady pain in the low back, pain running down the right leg on both sides and down the inside of the left leg and burning vulvar pain She was anorexic and barely able to walk The pelvis was completely frozen with carcinoma, which had also invaded the floor of the bladder, the anterior vaginal wall and the left labium Previous medication had been dictated by the family physician and included codeine, aspirin and morphine, without complete relief unless the patient was rendered comatose. Cobra venom treatment was started with 1 ampule daily for 2 days, then 2 ampules daily for 7 days On the 5th day the patient was relieved of back pain and pain in the legs The urinary symptoms were unchanged She could sit in a chair to eat, but walked no more than before. She was discharged on the 9th day on 1 ampule every other day

At 2-week and 4 week follow-ups the patient was completely free of pain during the day, but required phenobarbital for sleep at night.

She re-entered the hospital the 5th week after discharge for intrathecal alcohol injection because of dissatisfaction with injections and increasing pain at night. Complete relief from alcohol injection was obtained. She estimated that 50 per cent of her pain had been relieved on venom alone.

CASE 7 *(F.H.W. 27740)* Mrs. B., a 48 year-old, Swedish housewife, entered the hospital in 1937 for treatment of carcinoma of the ovary. Surgery and x-radiation were performed. She was treated at home, at which time she had extensive pelvic metastases, constant rectal tenesmus and constant low back pain. She was fairly comfortable on powdered opium given four or six times daily. Cobra venom treatment was started with ½ ampule the 1st day, then 1 ampule daily for 7 days, then 2 ampules daily for 4 days. The patient was continued on 2 ampules twice weekly for four more doses. Because the patient experienced only 30 per cent relief of pain and because the powdered opium exerted its influence on the constant rectal tenesmus as well as on the pain, cobra venom was discontinued.

CASE 8 *(F.H.W. 24367)* Mrs. M., a 60-year-old American housewife, first began treatment 5 years before admission for interstitial cystitis with moderately severe suprapubic, vaginal and deep pelvic pain. This prevented all but a bed-chair life, with no permanent relief on codeine or barbiturates. Cobra venom treatment was started on 1 ampule daily and continued at that dosage for 8 days, when the patient was discharged on 1 ampule every 3rd day.

Relief from pain was complete. If the patient went without the venom for more than 3 days, some of the old pain recurred. She walked without difficulty and was doing some light housework. The initial bladder capacity was between 300 and 350 cc. and there was no change under treatment. She was dilated routinely in order to give relief from urinary frequency. The patient has been followed for 3 months, and her freedom from pain has continued.

CASE 9 *(F.H.W. 24457)* Mrs. R., a 74-year-old, American housewife, 4 years before admission had had a hysterectomy and radium therapy for carcinoma of the uterine fundus. In 1938 she had carcinoma of the bladder treated by x-radiation and implantation of radon seeds. She entered the hospital complaining of constant, deep burning pain in the pelvis, with strangury, frequency, incontinence and loss of 20 pounds in weight. Previous medication was codeine and aspirin four to six times daily without complete relief from pain. The patient was bedridden. Cobra venom treatment was started with 1 ampule daily for 7 days. On the 6th day she was pain-free and able to sit up and walk a little. She was discharged on the 8th day on 1 ampule every other day.

In the 5th week of treatment the patient lapsed into uremia and died. She had been completely free of pain until death.

CASE 10 *(F.H.W. 22915)* Mrs. J., a 51 year-old Negro housewife had a vulvectomy and bilateral groin dissection for carcinoma of the vulva 6 years before admission. Recurrence in 1938 was treated by local radium application following which the patient developed a painful ulcer of the perineum between the rectum and the vagina. She complained of constant vulvar and perineal burning "like a hot poker pressed in her crotch," requiring codeine and aspirin every 3 or 4 hours. She could not sit or walk and was almost completely bedridden. Cobra venom treatment was started on 1 ampule daily. Nupercaine packs on the perineal ulcer gave great relief. From the 3rd to the 6th day the patient had 2 ampules daily. On the 7th day nupercaine packs were omitted and all other medication except ½ gr. of codeine some time during the day. She was discharged on the 13th day on no other medication, able to sit in a chair all day and to walk for 5 or 10 minutes. Her nutrition and spirits were definitely improved.

Two- 4 and 6-week follow-ups showed relief maintained on 1 ampule every other day.

CASE 11 *(F.H.W. 27028)* Mrs. P., a 49-year-old American housewife was treated with radium and x-radiation for carcinoma of the cervix 2 years before admission. She entered the hospital complaining of nausea, pain and occasional vomiting. Pain was particularly severe in the left groin radiating down the leg. A loss of 30 pounds in weight was noted. Previous medication was 30 or 40 gr. of aspirin daily and 6 to 12 gr. of Nembutal at night for 9 months. The patient was admitted with all the symptoms of salicylate poisoning. Cobra venom treatment was started with 1 ampule daily. On the 5th day relief from pain was complete, and the patient could feel "a blanket over the pain with occasional darts of pain coming up through it." Some phenobarbital was required for sleep at night. She was discharged on the 8th hospital day free of pain on 1 ampule every other day.

The follow-up at 4 weeks showed a weight gain of 7 pounds, and the patient was walking easily with slight weakness of the left leg. If the injection was missed, the patient noted recurrence of some pain on the 2nd day afterward. No other medication was used.

CASE 12 *(F.H.W. 25282)* Mrs. V., a 43-year-old Italian housewife, 3 years before admission had had radium and x-radiation for carcinoma of the cervix. In 1938 she had had x-radiation to metastatic carcinoma in the apex of the right lung with cervical and axillary nodes and a unilateral Horner's syndrome. She entered the hospital complaining of severe constant pain in the right arm, shoulder, chest and back, with partial paralysis of the right arm, sensory and motor changes and disuse atrophy. No relief had been experienced on codeine, plus 1/4 gr. of morphine three or four times daily given by the family physician. In the hospital the patient required 2 to 4 gr. of Pantopon daily and even when stuporous lay groaning with pain. Cobra venom treatment was started with 2 ampules daily for 4 days, and then 3 ampules daily. The patient was discharged on the 8th hospital day. 75 per cent relieved.

A 2 week follow up revealed that she needed no supplementary medication on 3 ampules daily but did on only 2 daily. A 4-week follow-up showed no change, but the patient was rapidly failing. This was not a case of addiction to opium derivatives.

CASE 13 *(F.H.W. 30316)* Mrs. M., a 43-year-old American housewife had had a carcinoma of the cervix treated by x-radiation and radium 4 months before admission. Widespread broad ligament extension persisted. She entered complaining of constant low backache pain radiating down the inside of the right leg as well as outside, and severe bladder spasm. The bladder spasm was relieved by dilating ureters and bladder but the pain was not affected. Previous medication included barbiturates, aspirin and up to 2 gr. of morphine daily injected hypodermically by the family physician. This patient was extremely difficult to evaluate because she had previously learned that she had carcinoma and her psychic equilibrium was most unstable. Cobra venom treatment was started with 2 ampules daily for the first 2 days, then 3 daily for the next 3 days. The patient was discharged on the 7th day on 2 ampules daily, relieved of 75 per cent of her pain.

At home she was subjected to a series of emotional shocks and the venom was discontinued. She was again placed

under hypodermic morphine injections by the family physician, awaiting alcohol injection. The result of treatment in this patient cannot be evaluated.

CASE 14 *(private case)* Miss S., a 37 year-old governess, 14 months before admission had had a radical mastectomy followed by local x-radiation for carcinoma of the breast. Four months before entry she had complained of chest and axillary pain, pain in the lower back radiating down the legs, pain in the pelvis and inability to walk. She was given a course of x-radiation of the pelvis and spine without change in the picture. Previous medication consisted of codeine and aspirin, which the patient was loath to take despite pain. Cobra venom treatment was started on 3 ampules daily and was continued at that level for 7 days. On the 4th day the patient was 40 per cent relieved. On the 5th day she was 70 per cent relieved. On discharge on the 7th day she was completely relieved and able to bend and to walk.

She continued to take 1 ampule daily with continued relief, although she could not resume her work.

CASE 15 *(F.H.W. 27878)* Mrs. D., a 56-year-old, American housewife, 9 months before admission had had a radical mastectomy and x-radiation for carcinoma of the breast. She had been complaining of 'arthritis' for the 2 months previous to entry, when she re-entered for an x-ray check-up for metastatic disease and control of pain. She had extensive bone metastases of the skull, cervical and lumbar spines and pelvis, with difficulty in swallowing, constant back pain and inability to walk. Cobra venom treatment was begun with 2 ampules daily, but additional medication was required for sleep at night. After a week of cobra venom the patient had no pain but was unable to sleep, for which she was given supplementary medication. Injections were discontinued because the patient was rapidly failing. She was transferred to a hospital near her home.

CASE 16 *(F.H.W. 30694)* Miss M., a 57-year-old stenographer, entered the hospital with a 1-year history of constant hematuria, low pelvic pain and frequency of every 15 or 20 minutes day and night. Carcinoma of the bladder was treated with two courses of x-radiation without appreciable regression of the tumor. Previous medication had been confined to the salicylates, without relief. Cobra venom treatment was started with 2 ampules daily. On the 3rd day 75 per cent of the pain was relieved. On the 5th day she was completely relieved of pain. The patient was discharged on the 8th day.

The maintenance dose was 1 ampule every other day. The patient was voiding only every 1 or 2 hours at night and day, with no pain.

CASE 17 *(private case)* Mrs. M., a 41-year-old, American housewife, was treated with radium and x-radiation elsewhere for carcinoma of the cervix. She entered the hospital complaining of constant low backache, pain in both legs, constant lower abdominal pain with cramps and inability to walk on account of pain. The pelvis was solid with carcinoma. Previous medication included codeine, the salicylates and morphine, administered by the family physician. Cobra venom treatment was started with 3 ampules and was continued for 7 days. On the 5th day she was able to dispense with all medication except bromides twice daily. On the 6th day 80 per cent of the pain was relieved. On the 8th day the patient was discharged on 1 ampule daily.

She was quite comfortable thereafter with small amounts of supplementary medication, and was up and out of bed, walking with some difficulty. Her mental outlook had been markedly improved.

DISCUSSION

As will be seen from Table 2, the percentage of complete relief compares favorably with the figures given by Kirschen,[9] Saenz[11] and Macht,[8] who quote much larger series in which about 70 per cent of the patients showed definite relief of pain, 10 per cent slight relief and 20 per cent were not affected. In this series, 8 of the 17 patients (46 per cent) considered themselves completely relieved. Four of the group (24 per cent) estimated their relief at from 75 to 95 per cent. Three (18 per cent) estimated their relief as from 50 to 75 per cent. Only 2 cases fell below 50 per cent relief, although 2 more of the cases who were more relieved were not continued on the venom, for other reasons. In other words, nearly 50 per cent of the patients were completely relieved of pain and in 88 per cent the relief was 50 per cent or more.

TABLE 1 *Listing of Cases, Results and Maintenance Doses.*

CASE NO	DIAGNOSIS	ESTIMATED IMMEDIATE RELIEF	ESTIMATED CONTINUED RELIEF	MAINTENANCE DOSE
		%	%	*ampules*
1	Ureteral spasm, chronic kidney infection (carcinoma of cervix)	100	100	1 every 2 days
2	Interstitial cystitis (Hunner's ulcer)	75	60	1 every 2 days
3	Interstitial cystitis (Hunner's ulcer)	80	60	1 every 2 days
4	Ovarian carcinomatosis, subacute intestinal obstruction	95	95	1 every 2 days
5	Carcinoma of cervix Class D	40–50	40–50 (discontinued alcohol injection)	1 every 2 days
6	Carcinoma of cervix Class D	50	50 (discontinued alcohol injection)	1 daily
7	Carcinoma of ovary (constant rectal tenesmus)	30	30 (discontinued)	1 daily
8	Interstitial cystitis (Hunner's ulcer)	100	100	1 every 3 days
9	Carcinoma of bladder	100	100	1 every 2 days
10	Carcinoma of vulva	100	100	1 every 2 days
11	Carcinoma of cervix Class D	100	100	1 every 2 days
12	Carcinoma of cervix Class D	75	75–100	3 daily
13	Carcinoma of cervix Class D	75	0	2 daily
14	Carcinoma of breast	100	100	2 daily
15	Carcinoma of breast	50	50 (discontinued)	1 daily
16	Carcinoma of bladder	100	100	1 every 2 days
17	Carcinoma of cervix Class D	80	80	1 daily

TABLE 2 *Summary of Results*

PERCENTAGE OF RELIEF	NO. OF CASES	PER CENT
95–100	8	46
75–95	4	24
50–75	3	18
0–50	2	12

Several additional facts seem to be indicated. The response to cobra venom can be estimated after five to seven days of administration. If the p

tient fails to respond by the end of that period, it is unlikely that there will be any benefit. If there is a response, it usually begins on the third or fourth day of injection, despite the amount used, and is complete by the sixth or seventh day. The benefits are not likely to increase after that time, but the relief of pain is likely to continue at that level, even though the amount is reduced to a maintenance level which is determined by the patient. The large majority of patients were able to maintain their relief on 1 ampule every other day, although a few required 1 ampule a day and several required 2 or 3 a day. There were no side reactions, and there was no evidence that increasing amounts of the drug were necessary. The drug seemed to act on pain no matter what its etiology. Other investigators[12] have used the drug in the treatment of pain due to chronic arthritis, acute Parkinsonism and cardiac disease, and it has been employed for relief of pain due to arteriosclerotic gangrene of the extremities in cases of chronic cystitis with bladder spasm and in patients with tic douloureux. These results seem to indicate that the field of use of the venom is well beyond the single problem of terminal cancer with its intractable pain.

SUMMARY

Seventeen cases are presented with their salient clinical details, and the use of cobra venom in the relief of their intractable pain is outlined.

In this small series, 46 per cent of the patients were completely relieved of pain and 88 per cent were relieved of half of their pain or more.

In those cases in which relief is obtained, the mental outlook and general health are benefited by release from the sharp drag of constant pain. Some patients are able to return to their work and to again become wage earners. In those who are only partially helped, the drug makes an excellent basal analgesic which can be augmented by relatively non-habit forming analgesics. This avoids the danger of morphine addiction and increasing opiate tolerance.

In those patients who are not helped, intrathecal alcohol injection or cordotomy is to be considered.

Since cobra venom can be self-administered, it makes an ideal outpatient treatment, or treatment which can easily be followed by the general practitioner in the non-hospitalized case. There is no evidenced danger of addiction, increasing tolerance or toxicity of the drug. Its cost is not prohibitive. The use of cobra venom seems to offer a real possibility of aid in the treatment of this difficult group of cases.

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PRACTICAL PSYCHOTHERAPY WITH ADOLESCENTS*

A Brief Survey of the Field for the General Practitioner

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THE general practitioner in his role of family physician still exerts a powerful influence in the family circle, with both parents and children, but especially so with the children, for they are conditioned in his favor because of the respect and faith they see their parents extend to him. Since the children have this good rapport with him, he is in an excellent position to handle their personality and behavior problems by applying certain methods which are arbitrarily termed mental hygiene. These procedures are essentially, first, a careful search for and recognition of signs and symptoms of personality disorders, and second, appropriate instruction and guidance to correct the conditions detected. The general practitioner who has been the doctor for a certain family for a number of years is usually well able, if he looks carefully and takes the time needed, to discover the beginning personality defects in the adolescents in that family. He will know if the youngster is becoming abnormally shy, introverted and sissy, and should realize that this may be the personality development of a case of dementia praecox; then it should be his duty to talk it over with the parents and the youngster separately, and evolve a daily schedule which will tend to divert the child into an extrovert type of activity, thus counteracting the tendencies to introversion; this is good practical mental hygiene. Behavior problems in the family are nearly always known to the family doctor, since the worried parent brings the child to him with the idea that "perhaps the child is ill and that is why he acts that way." In this paper there will be presented a general survey of problems met with in dealing with adolescents and a number of brief case histories to demonstrate particular problems; there will also be pointed out the frequency with which only simple guidance is needed to clear up what seems to the family and the adolescent himself an overwhelming difficulty. To supplement the work of the family doctor may be mentioned the plan of having a trained psychiatrist on call at each high school to handle personality problems among students and faculty, as well as to supervise the amount and method of sex education given in certain courses.

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PROBLEMS OF ADOLESCENCE IN GENERAL

Adjustment of the adolescent within himself includes many factors. Self-consciousness is promoted by awareness of increased bodily size and attendant clumsiness, and by the change of voice which in boys often subjects them to ridicule because of the embarrassing breaking from a bass into falsetto. Self-confidence is induced by encouraging them to make things by handicraft, particularly useful things such as tables, bookcases and shelving, repair work about the house and care of the family car. It is helpful to obtain a part-time job in a store or a newspaper route, to go with one's "gang" on hikes and educational trips, and to be away from home overnight or longer without development of appreciable homesickness. The personality type of the adolescent becomes more noticeable and we see him as the extrovert, the good mixer, or as the introvert, the solitary one who likes to keep to himself and reads a great deal. Religion becomes more objective to the adolescent as he tries to rationalize what people preach and what they actually practice, and he begins to doubt many of the so-called religious truths; he often becomes cynical or agnostic, or perhaps openly defiant concerning religion, and it is then wise to attempt only to steer him toward a rational golden-rule type of religion. The individual ambitions have usually passed through the locomotive-engineer–policeman–fireman–G man stage into the more or less idealistic doctor–lawyer–clergyman–musician–engineer stage, he should be wisely led to consider his assets of individual ability, education, family dependence and personality type and from the sum of these try to plan a reasonable career. Sexually the adolescent has many difficulties with which to contend: curiosity, anxiety, experiences, either homosexual or heterosexual, with those of his own age or adults, masturbation, menstruation, erection and nocturnal emissions, and the evaluation by the girl of father–brother and by the boy of mother–sister ideals with what is met outside the family.

CASE 1. A 14-year-old boy was given a "lecture" on sex by his father, who was quite embarrassed at the

event but had been prompted into it by the boy's mother The talk was of the type one would expect under the circumstances vague, mystifying, terrifying For instance, the boy was told that paralyzed people who walked with canes were that way because of "bad lives," and that masturbation would drain off his spinal fluid making him weak-minded or even crazy Besides other misinformation the boy was further led to consider sex as dirty and taboo because of the father's hesitant manner and obvious uneasiness.

Adjustment of the adolescent to the world forces the recognition of additional factors Concerning his family the adolescent is faced with comparison of it with other families of which he knows and there comes up the beginning awareness of such things as social standing economic status and the seeming intra-family happiness of others with possibly the lack of it in his own family

Case 2. A girl of 14 quite well developed physically and mentally for her age, had been having terrifying dreams at night she would cry out as if in fear and often sit up in anger would wake others, but on their awakening her and trying to find out what was wrong she would be unable to recall any particular dream. Investigation showed that there were two brothers, no sisters, and a henpecked father Being the only daughter she was her father's idol and he wanted her to be perfect, so much so that he was constantly criticizing her clothes, desire for boy friends and so forth As an example, one Saturday morning when she was going on a hike with a group of young people from the church she came to breakfast in riding breeches and a white shirt borrowed from her brother Her father upbraided her for immodesty because he considered she did not have the shirt tucked down properly inside the breeches (she had never worn a boy's shirt before) and her pink undergarment showed through the white cloth of the shirt. After her father had been shown that his excessive criticism of the girl was upsetting her and was liable to turn her against him and after the daughter had been shown that her father's seeming distrust of her moral tendencies was because of his desire that she be perfect the episodes of night cries ceased. More detailed study of the case would show a number of definite mental conflicts in the father's personality as well as in the mother's and particularly the war between the two but we are concerned only with the relatively simple measures needed to clear up the daughter's difficulty

The dominant parent influences the situation, and it is a problem just how the adolescent will mature with such a force exerted on his personality Here too one must consider the effect of a "broken" home, whether it be from death, separation divorce with or without remarriage or the presence of a step-parent In school there is an adjustment to the varying personalities of teachers and the influence of these personalities on the adolescent To what type of teacher is he attracted, from what type is he repelled, one resembling a parent or the direct opposite? By an evaluation of how each school subject is handled one can obtain a fairly accurate idea of the adolescent's qualities of intellect emotions, ambitions, stableness and relative maturity of personality From his friends one can further judge his personality Does he choose those of his own age and social status, does he dominate or only serve? How does he adjust to strangers Is he matter-of-fact, friendly or hostile, neutral or suspicious and why? In a change of neighborhood the adolescent is faced with the problem of making new friends or going back to the old neighborhood during his leisure Which does he do, and why?

PROBLEMS PROMINENT IN THE EARLY PERIOD OF ADOLESCENCE

Bodily changes are of particular importance between the twelfth and sixteenth years because of adjustments needed to handle rapidly increasing size and strength physical clumsiness and awareness of sexual development. The adolescent may show bashfulness, sensitiveness and moodiness, particularly if he was of that temperament as a child and the stress of adolescent changes is aggravated by callous ridicule by members of the family and acquaintances. A certain amount of good natured "kidding" is of definite value in easing the adolescent's sense of shyness inferiority and feelings of strangeness for it is possible to make the adolescent see the humorous side of his difficulties, particularly the gross ones such as clumsiness gawkiness and voice cracking and to show him that others his age are similarly affected The sexual changes are usually those most liable to cause difficulties, with the young adolescents rather frequently having trouble adjusting to the occurrence of menstruation, erections and nocturnal emissions, and particularly masturbation This last is much better understood today but is still very frequently accompanied by psychological struggles of varying degree As previously mentioned sexual curiosity precocious sexual experiences, anxiety of sexual origin the comparison of mother–sister ideals and father–brother ideals with what is found in real life, are some of the problems engendered relative to sexual awareness in youth

Case 3 A girl of 14 hated her mother because of the following incident. At the age of 12, while at the beach among a mixed crowd of friends and wearing a white bathing suit, she menstruated for the first time. The accident was called to her attention by one of the other girls after most of the group had already noticed her predicament. Not only was she embarrassed and humiliated but also terrified until someone explained to her what had happened.

Loss of a loved one may more or less profoundly upset the personality balance of an adolescent the loss resulting from death or separation from parent sibling close relative or friend. The

PRACTICAL PSYCHOTHERAPY WITH ADOLESCENTS*

A Brief Survey of the Field for the General Practitioner

DANIEL J SULLIVAN, M.D.,† AND NORRIS B FLANAGAN, M.D.†

BOSTON

THE general practitioner in his role of family physician still exerts a powerful influence in the family circle, with both parents and children, but especially so with the children, for they are conditioned in his favor because of the respect and faith they see their parents extend to him. Since the children have this good rapport with him, he is in an excellent position to handle their personality and behavior problems by applying certain methods which are arbitrarily termed mental hygiene. These procedures are essentially, first, a careful search for and recognition of signs and symptoms of personality disorders, and second, appropriate instruction and guidance to correct the conditions detected. The general practitioner who has been the doctor for a certain family for a number of years is usually well able, if he looks carefully and takes the time needed, to discover the beginning personality defects in the adolescents in that family. He will know if the youngster is becoming abnormally shy, introverted and sissy, and should realize that this may be the personality development of a case of dementia praecox; then it should be his duty to talk it over with the parents and the youngster separately, and evolve a daily schedule which will tend to divert the child into an extrovert type of activity, thus counteracting the tendencies to introversion; this is good practical mental hygiene. Behavior problems in the family are nearly always known to the family doctor, since the worried parent brings the child to him with the idea that "perhaps the child is ill and that is why he acts that way." In this paper there will be presented a general survey of problems met with in dealing with adolescents and a number of brief case histories to demonstrate particular problems; there will also be pointed out the frequency with which only simple guidance is needed to clear up what seems to the family and the adolescent himself an overwhelming difficulty. To supplement the work of the family doctor may be mentioned the plan of having a trained psychiatrist on call at each high school to handle personality problems among students and faculty, as well as to supervise the amount and method of sex education given in certain courses.

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CASE I. A 14 year-old boy was given a "lecture" on sex by his father, who was quite embarrassed at the

PROBLEMS PROMINENT IN THE LATE PERIOD OF ADOLESCENCE

Social adjustments are usually heterosexual be ween sixteen and twenty-one, with active interest n the opposite sex manifested by learning to dance, oing to parties and a wide familiarity with the urrent popular songs, dance orchestras and movie tars One will find, incidentally, that the frequent love and kisses wording of the popular songs s much less sensual in actual meaning to the dolescent than superficial reading would indi ate At this time the adolescent who is back vard in such social adjustments often begins to assume the appearance of a wallflower" and is juite unhappy about it

At about this time the adolescent should begin entative plans for a career and he should be ielped in this by some adult, such as a school fac ulty adviser, who has been designated to give vo- ational guidance Now the advisability of the dolescent going on to college should be deter mined If a college career seems wise, should ie train for business, a profession, such as medi ine, nursing dentistry teaching, engineering and so forth, or should the adolescent turn into the pathways of the trades or into clerical work? The value of a part-time job while in high school, keeping in mind the adolescent s health and the proportion of time allowed for his studies is often very great Many times a night-school education can be advised and planned, so that on graduation from high school and after obtaining a full-time job the adolescent can continue the development of any special talent or ambition he may have. Incidentally, in this present period of consider able national unemployment the adviser might suggest tentative plans for postgraduate high school courses or night school courses should the adolescent finish high school and find no job

Case 7 A boy of 19 the fifth of seven children had had 1 year of college with partial failure because of living at home and of an immature personality His father was a construction engineer the boy wanted to be a physi cian and had the necessary capacity The mother domi nated the family by spoiled-child methods and by du abling headache attacks of definite psychic origin Be cause the medical course took so long and the boy would have to go away to school she insisted by the usual meth ods that he take engineering giving as her reasons that the father was an engineer the course was shorter the boy could live at home and use the family car to go to and from school and she needed him at home as he was really the oldest boy since his older brother was working away from home. The situation was cleared up by blunt questioning of the mother s motives, pointing out to her the selfish nature of her reasons In wanting him to take engineering Subsequent events revealed the value of correcting this situation for the boy as he went into the premedical course and had great difficulty with a minimal mathematics he would have been a tragic failure in engineering school

Case 8 A boy of 18 and of low average intelligence, was pushed into an engineering school from which his father had graduated. He failed, was labeled "dumb" by his father and became depressed. It was found that he had a knack for repairing things like clocks, electric motors and so forth and was given a course as a machinist. As a result he is now a skilled mechanic and machinist, well adjusted to himself and the world.

Personality development in general should be considered Has the adolescent learned to get along with people in general? Has he matured? Has he shown evidences of stableness, initiative, perseverance and responsibility? Moodiness, se clusiveness and irritability may be evidences of secret troubles nearly unlimited in variety that keep him preoccupied sensitive and chronically on the defensive. Inner conflicts and personality struggles can markedly lower an adolescent s effi ciency

Case 9 In a Boston suburban high school in the win ter of 1937 there were five runaways among the student body within three weeks, each one independent of the others, although suggestion may have influenced one or two. There is certainly a psychological story behind each case and the following one is known to the authors. A boy of 16 had had a stepmother from the age of 5 and as he grew up she continued to punish him in very childish ways that is though the punishment might be justified her methods would humiliate him and make him ridiculous as a "baby" in the eyes of his playmates. For example even when he was as old as 13 or 14 his stepmother was still making him stay in the yard or go to bed with out his supper because he had been disobedient. As he continued to grow older the disciplinary measures re mained almost constantly childish finally when one or two poor marks were received in school he rebelled against the humiliating discipline he knew would come and ran away from home. The revealing part of it is that he went directly to the home of his maternal aunt in New York City a woman who had always closely re sembled her sister, that is, the boy s mother

Alcohol is a common problem met with by near ly all adolescents, and is best handled like the ques tion of sex—educate, do not preach, keep the adol escent well occupied in reasonably controlled en vironments, and should he experiment with unfor tunate results do not be too quick to damn him Alcohol is usually first used to be a "good fellow and to show off if it persists it is an escape mech anism requiring intensive psychiatric treatment by a specially trained physician

Sexual conflicts always occur, and should be forestalled by routine sex education at various ages in the adolescent s life there should always be someone to whom he can go with these problems, better someone outside the family, and best his family physician In girls must be considered masturbation and menstruation, in boys masturba tion, nocturnal emissions and erections, and in both

adolescent may begin brooding over "death and the futility of it all" to a most unhealthy and occasionally tragic degree Cases of this kind, when of noticeable seriousness, are best handled by a psychiatrist, particularly if the adolescent is of the sensitive, impulsive, seclusive type

Personal failure, whether in school, job or career plans, may retard the young adolescent's maturing Often one finds the sense of personal failure is due solely to or is markedly aggravated by the adolescent's comparing himself to a more successful sibling or acquaintance, or to the parents' pointing out such a comparison to him, or his planning on too high a level for his abilities Such a situation may require a change of school to offset the retardation of normal progress (Case 8)

Puppy love, or the first heterosexual attachment, is a delicate situation in many cases The emotional event is usually pure and idealistic, and if properly nurtured by the parents it will lead to the development of a healthy character disposed to high love ideals It is a serious thing to the adolescent, so treat him kindly, good-natured "kidding" is of value in tempering the adolescent's idealism with a little realism, but ridicule and scorn are both cruel and dangerous It is wise to keep the affair in the home or in the company of others such as at movies, games, dances and parties, with a group of suitable companions On "house dates" the girl's parents should be present in the early part of the evening, and close by for the remainder of the evening, however, the parents should not show signs of mistrust or spying lest the adolescents take this for a dare and give the parents reason for mistrusting them If the adolescent chooses some undesirable companion as a love object the parents can better control the situation by inviting the individual into the home and treating the affair impersonally, hoping that the adolescent will eventually see the undesirable qualities of the love object and terminate the acquaintance If the parents forbid the affair or are rude to the companion and become melodramatic over the situation, they are merely strengthening the love affair by adding to it martyrdom

Mental hygiene as a subject should be in the curriculum of every high school, and as an object should be available to both faculty and students through the medium of a consultant psychiatrist Great steps have been made in affording routine general physical and dental check-ups on schoolchildren, but the so-called mental side has been neglected Routine mental examinations are not needed, but there should be someone trained in mental hygiene to whom both faculty and students can go or be sent to have their personality difficulties checked over, and this same individual should give both faculty and students a series of educational talks on mental hygiene as a specialized field of medicine and as a part of everyone's everyday life

CASE 4 A high-school biology teacher with a hobby of psychology spent a good deal of the class time expounding his personal ideas of the cause and cure of mental diseases He delighted in describing the fearful-appearing maniacs he claimed to have seen on trips through a state hospital He filled his students with a great deal of terrifying material and a commensurate amount of misinformation on things psychological and psychiatric.

CASE 5 A gymnasium teacher, very masculine in appearance and quite rugged, put her classes of girls through various very strenuous exercises, tumbling acts and pyramid formations that were obviously unsuited to the average girl's physique. She expected the girls to be as strong and tireless as she, and by scorn and ridicule drove them to exceed their physical abilities

Social changes follow fairly definite patterns, with first a rather tacit separation of sexes by their divergent interests, the boys occupied by sports, gangs and adventure while the girls keep busy with their own sports, domestic tasks, reading, music and school work In the middle teens the merging interests of the sexes bring them together again, as the boys no longer consider dancing as "sissy stuff" and the girls wax coquettish

CASE 6 A girl of 15 became depressed, moody, self accusatory, irritable in relation to her parents, and kept to herself a good deal Interviews revealed that she had been frightened by the sexual advances of a boy, believed herself bad for not checking him more quickly than she did and worried that others could tell she had been "soiled by a dirty boy" Proper sex education, a little advance information on what to expect at times from young men and general instructions concerning how to handle such a situation would have prevented such a psychosexual trauma in this girl

In school there is quite an adjustment to be made in the change from grade-school routine to a high-school curriculum which provides more individual freedom and responsibility because of the change from one room and one teacher for the day to that of a schedule calling for several teachers and several rooms, study periods, free periods, the lunch period and its social life, and assembly meetings With the development of the junior high school there has been a more gradual change from primary to secondary school, but despite this there is a very real difference between the two in the adolescent's experience He may find that the relative freedom of the high school schedule leaves him unguided, unsupported and rather lost for a while, and the degree of this aimless confused period varies inversely to the relative maturity of personality

family physician are of inestimable value to them and to the communities in which they ultimately settle as home builders The majority of personality disorders in adolescents can be prevented or removed if the family physician is on the alert and will give time, understanding and guidance to the adolescent before personality deviation becomes fixed or marked

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BENNO REINHARDT, 1819–1852

A Biographical Study and a Contribution to the Early History of Virchows Archiv

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GENERALLY the medical historian has paid little attention to a few individuals who, a century ago, had done so much to transform the esoteric, decadent medicine of Germany into medical science as it is known to us today Virchow is rightfully hailed as the father of cellular pathology, and his name is immortalized by *Virchows Archiv für pathologische Anatomie und Physiologie und für klinische Medizin* Yet the driving force in the inception of this periodical was a young physician who died in the prime of his life and activity, but whose name has been buried in oblivion Only scattered records are available, and even these are inaccessible and hidden away in obsolete journals and obituary notes. Virchow himself gave unreserved credit to him whose life history is here reconstructed

Benno Ernst Heinrich Reinhardt was born May 4, 1819 in the little rural town of Neu Strelitz, then the capital of the Grand Duchy of Mecklenburg-Strelitz, as the eighth child of Friedrich and Sophia Reinhardt, nee Linecke Although the year of his birth is occasionally given as 1820 his doctor s dissertation[1] verifies his birth year as 1819 From early childhood he enjoyed the congenial home and environment of a cultured middle-class family of sufficient means to afford the best education for the children His father a pharmacist, was greatly interested in the new development of organic chemistry and medicine, and aroused in the plastic and receptive mind of his youngest son profound interest in the natural sciences. Not much is known of Benno s formative years, except that he entered the local Gymnasium (high school) where he progressed satisfactorily in the pursuit of humanistic and scientific studies. Also as was the custom of the educated middle class of Germany, the study of music and singing was a prerequisite to a cultural education and young Reinhardt like Billroth and other great German contemporaries, loved and appreciated good music An accomplished cellist with a fine tenor voice, he was much in demand among his friends and fellow students

At the age of twenty Reinhardt matriculated as a medical student in the University of Berlin and devoted the first two semesters to the lectures of such men as Johannes Müller, Schönlein, Henle and Schlemm In this entering class were a number of attentive and brilliant young men destined to become the scientific leaders of modern medicine. These were Rudolph Virchow, Ernst von Brücke, later professor of physiology in Vienna and associated until his death with the New Vienna School Emil DuBois-Reymond the founder of electrophysiology and, in 1858, successor to Johannes Muller s chair of physiology, Riess, who in the revolutionary days of 1848 directed the Handwerker Verein of Berlin in its struggle for political equality and finally Benno Reinhardt himself

While in Berlin, Reinhardt devoted himself to the study of botany and zoology, which had achieved new interest by the discoveries and studies of Schleiden He left for Halle in 1840 to study under the two Krukenbergs, d Alton Meier and Blasius, and he became particularly interested in microscopy and clinical medicine. It was then that he decided to devote his life to anatomic and microscopic pathology

In 1845 Reinhardt returned to Berlin for his last semester and met many of his later friends and collaborators particularly Rudolph Leubuscher, Neisser and Traube, the editor of the *Beitrage zur experimentellen Pathologie und Physiologie* Although this journal survived only two numbers, published in 1846, it served as the model and precursor of the later *Archiv*

Reinhardt graduated as doctor of medicine in 1844 with the presentation of an inaugural dissertation *De peritonitidis symptomatologia*[1] written in Latin, as was still the custom of his time This

thesis consisted of several parts, one of which opposed J Vogel and was later published[2] in more elaborate form in Traube's *Beiträge* in 1846 Virchow was attracted by the new views expressed in Reinhardt's dissertation and decided to call on him early in 1844 Of this meeting Virchow[11] wrote later

I became acquainted with him in 1844 when he had returned to Berlin for graduation, still wearing his native costume. At that time he was already greatly occupied with the examination of pus It was this observation which inspired me to meet him. On paging his dissertation, which he never regarded as a valuable contribution to medicine, I found as a dedication an old wood cut from Nuremberg pasted facetiously to the fly leaf, beneath which Reinhardt had written

Schöpfen aus der Freundschafts Quelle
Lass uns, die uns nie versiegt,
Ehe, wie die leichte Welle,
Uns das Leben schnell verfliegt.

This verse may be freely translated as "Let us drink from the fountain of friendship ere it ceases, and before life leaves us like a rippling wave"

Neither Reinhardt nor Virchow realized at that moment that this characteristic aphorism would be the epitome of a lifelong friendship, to be abruptly broken only by Reinhardt's premature death in 1852 Both men cherished the same basic ideas and conceptions with regard to their science and their philosophy, and became intimate friends, meeting almost daily Both were members of the Berliner Gelehrtenbund, a group of young physicians Reinhardt always advocated and urged the independent action and progress of this society With Virchow he opposed and fought the then current tenets of medicine and planned to create a new medical science based upon the newly reorganized and fertile soil of natural sciences as developed by Schwann, Schleiden, Liebig and their own beloved teacher, Johannes Muller

Faculty medicine especially aroused the flaming ire of Reinhardt, and the still vivid memory of the state examination led him to determined opposition He sought to supplant the esoteric or secretive medicine, as he used to call it, with a new exoteric or intelligent medicine In the opinions of Virchow and Reinhardt the time had come to do away with the then still prevailing doctrines of humoral pathology and to build up an entirely new science of physiologic pathology, based on the new cellular theories of their famous teachers The favorite topic of discussions between Virchow and Reinhardt was the establishment of a new medical periodical, to be published independently and outside of the decadent and obsolete medical faculty Reinhardt was the mainspring and driving force of this new movement, and Virchow[11] wrote

The idea of developing a new activity in exoteric form outside of official circles was the most frequent subject of our conversations The kindness and quietude which Reinhardt usually displayed in social intercourse often vanished entirely at such discussions After we had paced the room for half a night, as so often happened, our ideas crystallized more and more into intelligent and tangible plans Under such circumstances our desire to publish and edit our own medical journal became ever more real Reinhardt, especially, who had elaborated upon his paper on pus, set out in actual ire to begin independently

In this quotation Virchow himself gives the greater credit to Reinhardt for the inception and realization of the publication of the *Archiv* A letter written by him[11] to Virchow on December 12, 1845, shows more than anything else Reinhardt's ambition and energy

It is absolutely necessary that we come together and start an energetic campaign against those esoterics who now crowd our science with their silly humbug When we read all the nonsense which is being promulgated then we must be driven crazy Formerly such subjects were treated in therapeutics and materia medica, or in sublime ideas on the character of disease. This may be granted them. When, however, the same people approach pathologic anatomy, microscopy, and so forth, it can be suffered no longer Against this we have to wage a relentless revolt. If it continues this way, general pathology and microscopic anatomy will become just such a junkshop of reverie and stupidity as materia medica is now It is imperative that this nuisance be now assailed by thorough and detailed researches as well as by pitiless criticism, executed with utmost brutality Schleiden's *Grundzüge der wissenschaftlichen Botanik* should serve as an example for our strategy

With an amazing fighting spirit Reinhardt adopted the new tenets of modern natural sciences We cannot but wonder how much passion and fervor lay buried beneath his kind and timid nature Rudolph Leubuscher, a student friend who lived and boarded with Reinhardt in Berlin during the latter's last years before graduation, and who himself graduated as a physician the year before, wrote[9] in the introduction to Reinhardt's posthumous papers "He was a man without passion, but of highest intellectual integrity and honesty Only science and music could stir his soul and emotions to a pitch"

Reinhardt's process of thinking was deliberate, but he never gave up a problem until he had solved it Often he would carry an idea with him for years, and then would suddenly decide to solve it without rest or interruption Psychologically Reinhardt was an introvert, shy and timid He loved solitude and disliked social affairs But once won over he was the best and most loyal friend How close, then, must this new science of medicine have been to his heart! How enthusiastic and devoted he must have been for his cause! It is not surprising that he risked his life, and gave it,

for such a noble task—yet he lived long enough to see his greatest dream come true.

On April 6, 1847, the first number of this new periodical appeared, bearing the title *Archiv für pathologische Anatomie und Physiologie und für klinische Medizin* under the joint editorship of Rudolph Virchow and Benno Reinhardt. The prospectus which occupied the first two pages clearly stated the aim and purpose of the new periodical, or rather the ambition and object of its devoted editors and collaborators. For its importance in medical history it is here translated in its entirety.

In publishing this new medical journal we first of all wish to satisfy a long entertained desire of ourselves as well as of many others in northern Germany who have felt the absence of a medical periodical edited with the highest intellectual integrity. From our *Archiv* we exclude in principle everything not directly connected with medicine proper, that is, not concerned primarily with pathology and therapeutics. This journal shall be accessible to anatomy and histology to physiology and chemistry but only in so far as they are applied directly to medicine. We could have limited our scope still closer if an absolute isolation of the individual medical disciplines of our time had permitted it.

The point of view which we take, and the detailed motivation of which is stated in this number, is that of pure natural science. Practical as well as applied medicine and theoretical as well as pathologic physiology are the ideals which we shall serve and for which we shall do everything possible within our limitations. While absolutely granting the independence and necessity of pathologic anatomy and clinical medicine, we regard them nevertheless, only as sources for new problems and questions the answer to which must be found in pathologic physiology. Since, however, these questions can be answered only after painstaking and detailed studies of the symptoms found in the living body and of the conditions manifested at postmortems, we demand primarily and chiefly a detailed and progressive development of anatomical and clinical experience. Such empirical research only can gradually produce the true theories of medicine—that is of pathologic physiology.

We do not, therefore, solicit contributions which completely close the discussion of any given problem. Nevertheless, we demand that every contribution must be the result of detailed research and should actually promote the problem studied. For this very reason we have decided not to publish subsequent numbers at any given regular intervals because this would necessitate superficiality of treatment. We shall publish additional numbers only when and if sufficient contributions of the type just mentioned are available. However we hope to be able to promise for publication this year another number of about seventy two pages. The interest of the collaborating and reading physicians must decide the future of this enterprise. Finally only original contributions have access to our *Archiv* and we leave it to the future to decide to what extent critical and statistical material shall be considered.

The publisher Georg Reimer announced in an appended note that the price for each volume comprising three individual numbers, would be approximately two dollars.

The *Archiv* was finally born. Virchow[11] said of the aim of this journal:

Many a journal is born by speculation of a publisher by ambition to head a periodical, or by the urge to climb to the top and thus to achieve power. Such a man is inclined to work himself, but far oftener he prefers to have others work for him. Space-fillers and miscellaneous and feuilleton articles are written, or dissertations and other articles are reprinted. The real work is being done by the contributors for little or no remuneration.

All this did not apply to us. We had to look for a publisher. That we succeeded in finding such a reliable and disinterested man was due only to a combination of fortunate circumstances. Lack of work was unknown to us. And even though we did not intend to work without some monetary reward we excluded in principle the salary of the editors so long as the work was not linked with direct and considerable expense. The aim of the *Archiv* was to achieve influence. We were then just in that period of life where we had few needs, but we had a burning desire for creative activities. We were determined to bring the greatest sacrifices because we rated the chance to guide science far higher than personal or official success.

From the beginning our work for the *Archiv* experienced many difficulties. The political activities of 1848 excited Reinhardt no less than me in our political views and even though his political activities were limited to a smaller circle, they promulgated the same aims. Our separation, the new positions, the founding of the *Annalen des Charité Krankenhauses* and my negotiations with Wurzburg seemed to bring about the end of the *Archiv* even though neither Reinhardt nor I intended to let it die.

It was a valiant fight that these two men waged for their journal, and they succeeded. It appears that Reinhardt who was ill at the time had the strenuous task of supervising and editing the *Archiv* while Virchow lived in political exile in Würzburg. This task was only a minor part of Reinhardt's scope of activities. During the time of the establishment of the *Archiv* he continued his researches and published a paper[3] on granulation tissue in the first number. This paper was criticized by Jakob Henle, and Reinhardt refuted Henle's contentions in another paper[4] on the mitosis of nuclei. In the same year (1847) he became assistant to the gynecologist Karl Mayer. Moreover, he pursued ceaselessly his work in microscopical researches, which progressed only slowly owing to great difficulties in procuring the necessary material since no official position gave him access to the morgues of the hospitals. Virchow, prosector at the Charité since 1846, finally solved this problem for him. Yet even this did not furnish an adequate outlet for Reinhardt's immense energies. He therefore established his own private practice while continuing his work on albuminous urine. These studies were the basis for a paper[6] on Bright's disease which was published in 1850 in the first volume of the *Annalen des Charité Krankenhauses*.

In 1848 Berlin was seized by the historic cholera epidemic, and during this period Reinhardt ob

tained a somewhat independent position in the cholera hospital directed by Schutz The results of this experience were published in a paper[5] on cholera, written in collaboration with his friend Leubuscher The termination of the epidemic, however, also ended Reinhardt's connection with the cholera hospital Incidentally, Hein and Dummler, two other young and promising physicians, were among the victims of this dreaded disease, and Virchow never forgot the terrible sufferings of the latter, an intimate friend[15]

In the winter of 1848 Reinhardt established himself in the University of Berlin as lecturer on pathologic anatomy and microscopy He delivered the inaugural lecture in the great auditorium a year to the day after the inauguration of his friend Leubuscher, who had graduated a year before him

Reinhardt's highest merit as a teacher was his intellectual integrity and honesty, but this very objectivity made his lectures dry and matter of fact Only gradually did he succeed in gathering around him a circle of devoted students It was a slow but steady growth, and he gave his personal attention to those who cared to listen to him Of interest here is Leubuscher's account of Reinhardt as a teacher In later years he[9] wrote

> As a teacher he [Reinhardt] was conscientious It pained him greatly if he could not elucidate the entire subject under discussion He was scrupulously precise in the treatment of his subject, and only for this reason refused to season his lectures with spirited digressions to subjects other than those just presented He was as honest in science as he was in his personal affairs Although shy and bashful, he was loyal and devoted to those whom he came to love.

Reinhardt would never alter or modify any fact or observation in order momentarily to please someone, even at the price of favor and friendship Being, furthermore, of a very indecisive mind he had the peculiarity, inexcusable in his position and work, of never consulting any but the most necessary books and references In fact, his friends always had to tell him what to read Yet he preferred to find everything for himself, thus losing much time and wasting much of his valuable energy

Reinhardt remained a teacher until his death In 1849 he became an assistant in the clinic for internal diseases, then still connected with the university, and located on Ziegler Strasse By Easter of the same year he finally succeeded in obtaining the comparatively independent position of prosector at the Charité, when Minister Ladenberg decreed the deposition of Virchow because of his political activities At first Reinhardt refused this position in loyalty to his friend and predecessor In fact, Virchow had to implore Reinhardt to accept the new opportunity by convincing him that the selection of someone else might prove to bring about the end of the *Archiv*, and of the new scientific movement they had created The decree of Virchow's deposition was soon revoked, but Virchow had already accepted the professorship of pathologic anatomy in Würzburg, and Reinhardt was formally appointed to the prosectorship in the fall of the same year He retained this position until his death in 1852

The Only Available Portrait of Benno Reinhardt (Roessle[14])

During the last six years of his life Reinhardt was afflicted with pulmonary tuberculosis His ambition and perseverance did more than any other factor to weaken his already impaired health Furthermore, he led an irregular life, transforming night into day, often neglecting his regular meals and his sleep for weeks Frequently he would not leave his room for days at a time, denying himself the recreative and resting amenities of social contact Since he had remained unmarried, the admonishing and sympathetic understanding of a wife was unknown to him He had only his few devoted friends to exhort him, yet even their arguments and often violent representations could not change his mind, in spite of his sufferings from exhaustive fatigue, overwork and insomnia The first symptoms of active tuberculosis became manifest in the spring of 1846, and Virchow[11] recorded this attack as follows "One

night on our way home from a meeting of the Gelehrtenbund, Reinhardt experienced sharp pain in the chest, and immediate physical examination revealed pleural friction. Soon thereafter *hemoptosis* developed and the auscultatory signs of an infiltration of the lung parenchyma became apparent." Careful nursing restored his health, and Reinhardt believed himself cured. Yet in spite of his first attack he would laugh at his friends' exhortations to take better care of his health. As before, he buried himself in his studies, working ceaselessly and even enlarging the scope of his activities. The result was a second attack in 1847, and from then on his health declined rapidly. In spite of extensive travels, vacations at the seashore (Heligoland) and proper care, he could no longer stay the progress of the disease. During the winter preceding his death he suffered from numerous colds, rheumatism and catarrh—yet he continued his work. Early in January, 1852, he again went to Heligoland for a vacation following a severe attack. On his return his health seemed greatly improved, but a sudden attack of petechial fever terminated his active life. He died peacefully without pain on March 11, 1852, in his thirty third year.

Virchow was in Würzburg when Reinhardt died, but he never forgot his loyal friend and collaborator. He[11] wrote the following in a memorial address for Reinhardt:

> What we had planned is achieved even to a greater degree than we dared to hope. Natural science is now the basis also of medicine. It is not our merit to have founded this method. It would have come in all probability even without us, and new ways and trails would have been opened. The battle, however against the existing conglomeration of arbitrary rationalism and crude empiricism which we have fought in the *Archiv* did, as I believe, accomplish much to change the direction of pathology. Let us continue in the sincere and earnest endeavor which was left us as a heritage from our deceased friend. Let us faithfully preserve his memory as will also be done by science, which he served so loyally.

Leubuscher,[12] Reinhardt's closest friend, wrote in his obituary:

> The few papers left by him will be the basis of researches in this particular field of medicine for a long time to come. Whether he would have lived up to our expectations, had fortune favored him more from the onset, we do not know. His was a nature depending on light and air for its development. He was taken away in the midst of his scientific development and growth. His future was promising. How many of us have loved this bashful indecisive and irritable companion!

This young man of great promise died at the peak of his career, as did Osler's young friends, Hewetson, MacCallum and McCrae. And so, exactly fifty years after the death of the brilliant young French scientist Xavier Bichat, who died at the age of thirty-one, medicine again suffered a grave loss in the early death of a young and devoted German disciple.

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REPORT ON MEDICAL PROGRESS

PHYSICAL THERAPY

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TO SUM up the recent progress of the entire field of physical therapy in the space allotted would be impossible The four branches receiving the most publicity at the present time will be discussed fever therapy, radiant light and heat, diathermy and peripheral vascular disease therapy, the discussion is prefaced by a few notes suggesting the early progress of this branch of medicine

There have been three distinct stages of progress in physical therapy in this country First, during and following the World War the value of this branch of medicine became generally recognized among the medical profession Second, in 1925 the American Medical Association appointed a Council on Physical Therapy consisting of nine members, and later twelve, who were specialists in various branches of medicine — only two of whom specialized in physical therapy Their work has been to create and maintain standards for physical therapy apparatus, to disseminate information and to give whatever assistance may be desired to the profession concerning this form of therapy Third, the council in 1934 requested five physicians whose practice was primarily concerned with this field of medicine to act as consultants on education in physical therapy and to do whatever might seem desirable to stimulate intelligent interest among the physicians and medical schools in the areas allotted to them The work of these consultants radiates from Chicago, St Louis, Philadelphia, New York and Boston, and their services are available for programs of medical meetings and for help in any form dealing with education in the field of physical therapy

It is a most gratifying suggestion of progress to note that at present laboratories, clinics and some of the leading research and clinical men in their various specialties are striving to evaluate properly the various types of physical therapy methods and apparatus Another encouraging trend is the increasing demand by medical undergraduates for an intelligent acquaintance with this subject This has resulted in the teaching of physical therapy in a steadily increasing number of medical schools throughout the country

During the last few years, in direct accord with the propaganda of manufacturers, there have been waves of enthusiasm for three types of apparatus used for treatment With the advent of the mercury vapor lamp, employed to generate ultra-violet rays, and the general advertising campaign recommending it for the cure of a large number of diseases, these lamps were sold by thousands throughout the country Today only a fraction of them are in use We now know that the lamps are of definite value in certain pathologic conditions but that such conditions are relatively few Later the infra-red generator — which for all practical purposes is the same as the heating element found in heating bowls — was advertised extensively to physicians as a remarkable discovery, and many purchased the generators These too have a clear but restricted field of usefulness Now we are beginning on a declining era of enthusiasm for high-frequency, short-wave apparatus Nearly every physician in this country has been exploited by salesmen handling such machines Many physicians who are not equipped by study, training or office assistance to use them successfully have nevertheless purchased them Some of these physicians have already discarded the apparatus, while others should and will follow their example The value of this type of machine is at present probably somewhat overrated, but the future will take care of demoting it to its correct level It has, however, a distinct field of usefulness in the treatment of many pathologic conditions, which will be better appreciated as research more clearly defines the apparatus's value and explains its results

FEVER THERAPY

Fever therapy has been tried during the last few years in many institutions and hospitals for probably no less than a hundred different diseases, because of their failure to respond satisfactorily to other therapeutic measures The results are somewhat discouraging Some of the pathologic conditions which, according to numerous investigators, receive little or no benefit from fever therapy are multiple sclerosis, subacute bacterial endocarditis, pulmonary tuberculosis, osteomyelitis, acute arthritis (except gonorrheal), Charcot arthropathies, hypertrophic arthritis and paralysis agitans — the last of which has in some cases been made distinctly worse

A few diseases which respond well in the ma-

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rity of cases, as reported by various clinics, are bes dorsalis, juvenile paresis, Sydenham's chorea id brucellosis. Early primary syphilis responds tter when fever therapy is combined with chemo- ierapy. Syphilitic optic atrophy, interstitial kera is, neuroretinitis and choroid retinitis may ben it by either artificial fever or malaria, but the st results are obtained by combining them. Cases general paresis are best treated in the following der: malaria and tryparsamide, either alone, tificial fever and tryparsamide and artificial fe r alone. There are, however, some patients r whom fever therapy is preferable to malaria eatment: those immune to malaria, those living here it is difficult to obtain malaria organisms r therapeutic purposes and those who should ot be subjected to an infection.

Gonorrhea was a very promising field for fever ierapy, with a very high percentage of remis- ions, until the advent of sulfanilamide. This rug now takes care of a large number of acute r chronic cases of gonorrhea and its complica ons. One research clinic formerly treated six cases week by fever therapy and now treats but one month. Some clinics have achieved a large num er of remissions (over 90 per cent) by using sul anilamide and fever together, while other clinics btain similar results by using sulfanilamide rou inely and resorting to fever therapy only when he drug is not effective. Most of the more obsti nate cases are found among the following types of nfection: endocervicitis, salpingitis, prostatitis, en locarditis and arthritis. In cases of pelvic gonor heal conditions in women which do not respond atisfactorily to sulfanilamide or fever therapy it is requently possible to produce encouraging results by the addition of local pelvic heating in conjunc ion with fever therapy.

Very little work has been done with fever thera py in dermatology. The following list suggests diseases which have been studied at a few clinics with marked benefit in a reasonably large per centage of cases: eczematoid lesions, erythema multiforme, psoriasis, urticaria, seborrheic derma titis and endocrine disorders.

Little has been accomplished in solving the asthma problem with fever therapy. A small num ber of cases resistant to other types of treatment have been reported as helped by this method. These patients probably belong to the group which have had asthma for many years and are re lieved for some months after an intercurrent dis ease such as pneumonia.

Mortality from fever therapy is being elimi nated to a large extent in accredited hospitals, pri marily because of recently acquired knowledge of the changes in body chemistry during the treat ment and of the methods of combating them. It must be expected that with high temperatures there will be attendant dangers, even though pa tients are subjected to a thorough physical ex amination beforehand. For this reason, fever therapy should be considered strictly a hospital procedure. It should be undertaken only by ex perienced physicians assisted by nurses or techni cians with special training and with an emer gency equipment close at hand, in order to avoid accidents.

Several years more will be needed for further study before an adequate evaluation of fever ther apy can be made. At the present time there are several medical specialties in which it may fur nish help in some cases which do not respond to the usual methods of treatment. Further scientific study of this form of treatment might well enlist the interest of leaders in these fields.

RADIANT LIGHT AND HEAT

Radiant light and heat concern themselves en tirely with three portions of the spectrum: ultra violet, visible and infra red rays. These have measurable and distinguishing wave lengths.

The shortest rays are the ultra violet. They are found in the spectrum next to the visible violet rays. They have no heat, but on long exposure, by a chemical process, cause sunburn. A few years ago ultra violet rays were advertised as a cure for most human ills. Through clinical experi ence and research it has been determined that many of these conditions improved despite, rather than because of the treatment: some—for exam ple, active pulmonary tuberculosis—were made worse, and still others—for example, erysipelas—for which ultra violet rays were often a specific are now treated largely by much simpler methods (with sulfanilamide). Many of the physiologic processes of ultra violet irradiation are not well understood, but some of its physiologic results have already been determined. It has been found that the rays effect the provitamins occurring in the ergosterol and chloresterol in the skin, giving rise to vitamin D, which is responsible for the absorption of calcium and phosphorus and the pre vention and cure of rickets.

Ultra violet irradiation seems to have little in fluence on the healing of fractures.

Repeated prolonged ultra violet irradiation may cause precancerous lesions such as keratosis senilis and xeroderma pigmentosum.

Practically all bacteria may be killed or attenu ated by ultra violet rays, provided the exposure is long enough and the rays are uninterrupted. These conditions cannot be fulfilled in living tis

sue except on surface lesions However, ultra-violet irradiation has recently been demonstrated to be of value in killing air-borne bacteria This function may have a universal application in the future if such use of the rays proves practicable for operating rooms

Body enzymes and ferments may be stimulated or destroyed, depending on the wave length, energy and duration of exposure Ultra-violet irradiation is of value in rickets, infantile tetany and several dermatologic conditions The last include ringworm, certain stages of psoriasis, scrofuloderma, telangiectasia and pityriasis rosea, certain types of acne vulgaris and eczema (especially as an aid in relieving the pruritus of the latter), alopecia areata and the several types of alopecia prematura, and erythema induratum Ulcers and wounds frequently respond well to the rays, except for chronic varicose ulcers and those resulting from Raynaud's disease and thromboangiitis obliterans The rays are of little benefit in fungous infections, sycosis vulgaris, dermatitis exfoliativa and lupus erythematosus

Ultra-violet irradiation should not be used in active pulmonary tuberculosis, but may be of decided benefit in extrapulmonary tuberculosis, for example skin, bone and joint, peritoneal, lymphatic, laryngeal and ulcerative intestinal tuberculosis

It has been a common observation with many workers that visible or infra-red rays used in conjunction with ultra-violet rays increase the value of the latter in the treatment of many of the diseases noted above

Of the visible spectrum we know little except that yellow gives us light, violet has some weak properties of the ultra-violet, blue and green are probably quieting and red is stimulating and heat-producing

Infra-red rays, so far as is known, produce nothing but heat Conversely, anything producing heat disperses it as infra-red rays

DIATHERMY

For half a century high-frequency currents have been used in the treatment of pathologic conditions The type of this current which is most commonly used is diathermy Diathermy is employed for generating heat in the body tissues, the heat being utilized in two ways for stimulating tissues, when it is known as medical diathermy, and for destroying tissues, when it is known as surgical diathermy There are three types of surgical diathermy desiccation current, causing dehydration of tissues, coagulation current, producing heat to the point of charring, and cutting current, which separates tissues as does a scalpel or a wire snare

Medical diathermy produces not only surface heat but heat deep in the tissues For many years the long-wave (300-m) current was used with two metal electrodes in close contact with the skin During the last ten years short-wave (3- to 30-m) currents have come into use These are of two varieties one uses two air-, rubber- or glass-spaced electrodes in the form of pads or cuffs with the part to be treated placed between them, the other an insulated cable which heats the patient by induction from the electromagnetic field produced around it The shorter the wave length the greater the frequency (number of current oscillations) and the more easily is the intervening tissue resistance overcome Because of this, the short-wave currents, with from 10,000,000 to 100,000,000 oscillations per second, produce less skin effect and more even heating throughout the deep tissues than do long-wave currents With each of these two types of current, control of the dosage must ultimately be under the direction of the patient. The short-wave currents seem to be more efficacious when producing only a very mild heat This makes the danger of overheating internal structures highly improbable

From actual recorded temperatures, we know that diathermy produces heat deep in the body tissues There is, however, no unanimity of opinion among investigators as to the specific wave length best adapted to produce this heat, nor is it yet known why mild heat is usually more beneficial than heating the tissues to the patient's tolerance It is possible that mild heat or certain wave lengths are more stimulating to the metabolic processes of the body

Diathermy may be useful for the following conditions if they are deeply situated (when surface muscles are the ones affected, a heating lamp will probably be as efficacious) contusions, strains and sprains (cold is best applied for eight or ten hours after the accident), dislocations, inflammation of tendons and bursas, fibrositis, chronic arthritis, frontal and maxillary sinusitis when there is adequate drainage, pleuritic pain in pneumonia, occasionally bronchitis, and several other less common pathologic conditions Diathermy seems to hasten the absorption of calcium deposits in bursitis Neuritis not infrequently does better with a heating lamp than with diathermy In cases of boils and carbuncles, the attendant pain and surrounding induration are usually lessened and either resolution or abscess formation is hastened

Surgical diathermy may be conveniently divided into two parts desiccation and coagulation currents produced by a spark-gap machine, and cutting current produced by a tube or a spark-gap machine

1902, Le Rivière, of Paris, treated a patient a form of high frequency current. During treatment the patient accidentally struck his d against an uninsulated wire at the point re he had a wart. In due time the wart disgrated and disappeared. Thus began the mod treatment of warts and moles by desiccation coagulation. Law and Clark in 1905 reported use of desiccation and coagulation currents in oval of skin cancer and even in that of por s of the tongue and face which were infiltrated cancer. From these beginnings has devel d the present cutting-current apparatus.

he desiccation and coagulation currents are l with a sharp needle electrode for the various s of skin diseases, among which are warts moles, skin cancer, certain of the keratoses, inate leukoplakia, lupus vulgaris and other s of cutaneous tuberculosis, senile angioma llary nevus, fibroma, xanthoma, cutaneous horn, ophyma and hypertrophic rosacea. The cur may also be used for the coagulation of ton (when there are definite reasons contraindicat the usual enucleation method), small vaginal ervical polyps, infections of Skene's or Bartho s glands and external hemorrhoids. Even ugh surgical procedures may be executed by apparatus found in the offices of many gen l practitioners, the fact remains that conscien s surgery and tonsillectomies must still be e by surgeons and laryngologists. However, it likewise equally important that the specialist, ore attempting to use this form of treatment on ients, devotes adequate time to its study and , if unfortunate results are to be avoided.

he electrical cutting current was originally de ed for cancer surgery in order to prohibit, by searing effect, the spread of cancer cells. It is d by some surgeons for removal of cancer in ost any situation, external or internal. Tissues biopsies may be removed with little or no eding. Some surgeons use the cutting current non malignant conditions such as resection of stomach or intestine, and for complicated situ ns involving the liver or gall bladder. It has ned a very important place in chest surgery for noval of tumors, lobectomy and so forth. In in operations it plays a vital part by coagulating od vessels. For separated retina it is recognized the most successful method of treatment at the sent time. Conization of the cervix is not rou ely successful but apparently is a valuable pro lure when used in some types of cases under cer n conditions. This current is extensively used the removal of various bladder growths, for nsurethral resection of the prostate, for prostatic bars, carcinomas and some hypertrophies, for urethral caruncles and for cysts of Bartholin's gland.

PERIPHERAL VASCULAR DISEASE THERAPY

Two types of apparatus are used in this field: a cuff similar to a sphygmomanometer except that with this machine the pressure is automatically regulated in both amount and duration, which causes a reactive hyperemia as described by Bier, and a metal, glass or celluloid boot extending above the patient's knee, into which air is automatically pumped and extracted, thereby producing an alternating positive and negative pressure within the boot; the amount and duration of both pressures may be regulated as desired. Some clinics use a heating lamp, mild diathermy or drugs at the same time to assist in dilatation of the peripheral blood vessels, which tends to improve the result. The purpose of these machines is to increase the blood flow and to open the non functioning capillaries, thereby improving the nutrition of affected parts.

Possible indications for the use of this type of apparatus are arteriosclerotic ulcers, acute vascular occlusion, frostbite, early thromboangiitis obliterans, gangrene of the digits, intermittent claudication and rest pain. Contraindications to its use are Raynaud's disease and other purely vasospastic diseases, extensive gangrene, thrombophlebitis, cellulitis or lymphangitis, extensive destruction of capillaries, venous thromboses, advanced thromboangiitis obliterans and frank infection.

The success or failure of this apparatus apparently depends on the extent of capillary block. In order to arrive at a reasonably accurate prognosis in most of these cases, arteriography with thorium dioxide must be done or the oxygen content of the venous blood obtained before and after using the apparatus. Because of the uncertainty of the results of this method of treatment, it has had a checkered career for many years. The present consensus seems to be that the boot type is somewhat less efficient as well as much more expensive than the cuff type. Neither apparently, while occasionally of distinct value, has proved to be as generally successful as was hoped.

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CASE RECORDS OF THE MASSACHUSETTS GENERAL HOSPITAL

ANTEMORTEM AND POSTMORTEM RECORDS AS USED IN WEEKLY CLINICOPATHOLOGICAL EXERCISES

FOUNDED BY RICHARD C. CABOT, M.D.

TRACY B. MALLORY, M.D., *Editor*

CASE 25371

PRESENTATION OF CASE

A forty-nine year-old unmarried woman was admitted complaining of diarrhea.

The patient had been well and active until two years prior to admission when she began having three or four loose bowel movements daily associated with pain on defecation. After four weeks a fissure in ano was excised and she had a complete remission of symptoms. Three months before admission she began to have intermittent episodes of black tarry stools. There was no change of bowel habits, but she began to feel weak and fatigued. Five weeks before entry she began to have loose watery movements often associated with the passage of bright-red blood although there were no massive hemorrhages. On subsequent occasions she denied repeatedly that there had ever been blood in the stools. The severity of the condition gradually increased until at the time of admission she was having from eight to twelve movements during the day and two or three at night. She had low abdominal cramps for a few minutes preceding defecation and pain and burning in the rectum during defecation. During the previous five weeks she had had anorexia and nausea following meals, and on four or five occasions vomited after forcing herself to eat. There was no evidence of blood in the vomitus. She had lost 12 pounds in weight in the previous two months. Her past and family histories were noncontributory.

Physical examination showed a thin pale woman who looked ill. The skin was dry and loose. Examination of the head and chest was negative. The blood pressure was 95 systolic, 55 diastolic. The abdomen was somewhat tense, with slight tenderness in the right lower quadrant. Rectal examination showed slight spasticity and irritability. There was a small external hemorrhoid. The uterus was negative.

The temperature was 100°F., the pulse 115, and the respirations 27.

The urine examination showed a specific gravity of 1.009 a slight trace of albumin and 35 white cells with an occasional clump and a rare red cell per high-power field. The blood showed a red-cell count of 3,430,000 with 60 per cent hemoglobin, and a white-cell count of 12,300 with 86 per cent polymorphonuclears, 12 per cent lymphocytes and 2 per cent mononuclears. The nonprotein nitrogen of the serum was 19 mg. per 100 cc., and the chlorides 98.4 millieq. per liter. Twelve successive stool examinations were guaiac negative, no ova, parasites or tubercle bacilli were seen. A gastric analysis showed 68 units of free hydrochloric acid, the contents were guaiac negative. A 1:20,000 tuberculin test was negative. A proctoscopic examination showed a slightly granular rectal mucosa. The rectum was otherwise negative. The proctoscope could not be passed full length because of spasm. There was no evidence of colitis in the rectum and rectosigmoid.

X-ray films of the chest were negative. Two attempts at examination of the colon by barium enema were unsatisfactory because the patient could not retain the barium. Some barium reached the cecum and terminal ileum, which rapidly filled from the cecum. The cecum appeared to be small and rather smooth. The kidneys were normal in appearance. A gastrointestinal series showed a normal stomach and small intestine except for the terminal ileum where there was a loss of mucosal markings. The margins of this portion of bowel appeared straight and rigid. The cecum was grossly reduced in size, and its margins were finely irregular. There was also an abnormal mucosa in the ascending colon and right transverse colon.

She was treated with emetin, Betaxin and transfusions. Her condition remained essentially unchanged and on the fifteenth hospital day an operation was performed.

DIFFERENTIAL DIAGNOSIS

DR. LELAND S. MCKITTRICK: I am not quite clear in my mind about the findings on proctoscopic examination. It says, "A proctoscopic examination showed a slightly granular rectal mucosa," and then it says "There was no evidence of colitis."

DR. CHESTER M. JONES: I did the proctoscopy. There was no evidence of ulceration, no pitting from previous ulcerations, and no capillary bleeding. It looked quite as a rectum does when you examine it after a soapsuds enema.

DR. MCKITTRICK: Had she been prepared? Had she been given any irritants?

DR. JONES: No. The appearance was merely what is seen following any prolonged diarrhea.

DR. MCKITTRICK: To summarize, she was a forty-nine year-old woman who had had a story of diarrhea two years previously, with an associated fissure in ano, which is certainly not uncommon. In regard to that episode I should think that one could draw no definite conclusions except that the diarrhea had persisted for a period of four

weeks at least Then she was all right until three months before entry In other words if this is all a part of the same process she had a remission until three months before admission when she began to have black tarry stools That was followed five weeks prior to admission by a definite bloody diarrhea, as evidenced by eight to twelve stools in the daytime and two or three at night

DR HORACE K. SOWLES It is only fair to say that the local physician denied the fact that she had tarry stools, and on rigorous cross-questioning she later denied the presence of fresh blood We were never able to obtain a positive guaiac test I think the blood story is misleading

DR MCKITTRICK At the moment we shall leave that out and say that she had had one episode of diarrhea without blood two years before and another episode of diarrhea five weeks before admission, as evidenced by frequent movements both daytime and night Lower abdominal cramps preceded defecation There was a loss of 12 pounds and nothing else of value in the history Physical examination was essentially negative, except that she looked dehydrated and sick, with evidence of loss of weight She had a hypotension, and an abdomen which was a little tense, with some tenderness in the right lower quadrant She had a low-grade fever and elevation of the pulse The laboratory examinations showed a secondary anemia, a moderate leukocytosis, a negative tuberculin test and a questionable proctoscopic examination If Dr Jones found the mucosa to be granular, then it was granular, and I do not believe we have any right to discard the finding From what he says I probably should not pay any attention to it, but still if it looked granular to him, it is going to look that way to me, at least for the time being

Would this be a good time to see the x-rays, Dr Holmes?

DR GEORGE W HOLMES The chest film is negative as described I presume that that is of some interest to a clinician because the question of tuberculosis might be raised This patient has no evidence of tuberculosis in the chest, whatever that may be worth in the final diagnosis There is also a film of the abdomen which shows no evidence of calcified tuberculous nodes, an observation which may also be evidence against tuberculosis In the films of the gastrointestinal tract it is not easy to demonstrate the lesion described I presume the man who made the examination had a better opportunity than we have, merely looking at the films There is some evidence here of trouble in the terminal ileum It does look stiff and irregular as he described it, but I should like to know whether it was a constant finding The cecum also looks small There is also a tendency for the barium to pile up in the terminal loop of the ileum We have one film that shows the upper small bowel very well, and it is evidently normal I think we have to rely on the description rather than the films Apparently the lesion involves both the small and the large intestines

DR MCKITTRICK In addition to a forty-nine-year-old woman who had had two episodes of diarrhea and at entry had evidence of loss of weight, dehydration and a little fever, secondary anemia and a leukocytosis, a negative tuberculin test and a negative chest series, we have a patient, who, by x-ray, had evidence of some kind of lesion involving the terminal ileum and proximal half of the colon It seems to me that there are several things that one must consider I think any patient, whether she is forty-nine or any other age, who has diarrhea and says she has passed blood and who has a proctoscopic examination that is not remarkable is under suspicion of having malignant disease, probably of the bowel I should think that could readily be ruled out here by the duration of two years, by the essentially negative physical examination, by the fact that the diarrhea was not due to obstruction and by the x-ray findings I mention that simply because it should always be considered in any differential diagnosis in which there has been a diarrhea, either with or without blood Then, of course, one also has to consider the question of an amebic infection That is difficult to rule in or out This patient was in the hospital fifteen days and was treated with emetin While I know relatively little about emetin I believe that in any patient with true amebic dysentery a course of emetin will result in definite improvement I shall therefore be content to exclude amebic infection of the bowel merely by virtue of the lack of response to treatment

I presume one should consider regional ileitis in discussing this problem I do not know enough about the disease to make a very intelligent differential diagnosis It does seem that the process is primarily one of the large bowel, a rather diffuse process, and there is little here on which I can make a diagnosis of regional ileitis, so I shall omit that from further discussion It does seem to me that tuberculosis has to be seriously considered The negative chest plate in no way excludes tuberculosis of the bowel, for the disease, particularly that of the more localized type, beginning as it usually does at the ileocecal region, may be and frequently is seen in the absence of tuberculosis in the lungs I think that this was probably a very diffuse process, which should have been recognizable by proctoscopic examination In such a case an advanced pulmonary process would or

ly be found I do not know enough about berculin test to be sure of the significance of ative test with a 1 20 000 dilution, to use it l help some to make the diagnosis of tuber s of the bowel unlikely

m not quite convinced even though Dr has tried to persuade me, that this process mited to the right side of the colon I did ire ask Dr Holmes this question for fear he l discourage me I have the feeling, how that if one puts a little barium in the bowel : is promptly pushed out, one has the right spect a little irritation on the left side of)wel Therefore, I am not sure but that we a process here which involved most exten the right colon, and to a slight degree the re ler of the bowel, including the rectum and rminal ileum If that is in any degree a r interpretation it seems to me that it pretty / forces us into a diagnosis of chronic idio- : ulcerative colitis It is difficult for me : how a process as extensive as this could nto the type of tuberculosis associated with ative chest plate and a negative tuberculin While chronic ulcerative colitis usually be in the rectum and progresses toward the), it does in certain cases begin in the right and may be more or less localized I am ore content with a diagnosis of chronic idio- : ulcerative colitis.

Jones There were two or three unusual s in the story that are not brought out in the ritten report. One was that it was absolute possible to obtain confirmation of the initial in the stools On repeated asking she al said, 'No Another interesting point was, ecall it, that her pain was discomfort in re . to bowel movements, it was always near rney's point, and it was the type of thing re apt to get more with regional ileitis than ulcerative colitis Furthermore, it is most ual to have a patient who is as sick as this it obviously was, who has a diarrhea as in hile as that which she presented and as much ic irritation evidenced, as Dr McKittrick has ed out by inability to hold a barium enema, who still gives a negative guaiac test day after The appearance of the rectum by proctoscope f the type that I always associate with irritation r than actual disease, because you do get the appearance from repeated enemas I have it at least six times in regional ileitis and many : in other diseases that cause diarrhea and ient bowel movements. It was obvious that was colonic disease higher up, and my recol in is that Dr Hampton stressed the possi but not the probability, of ulcerative colitis with a spread into the ileum and down the colon The other points have all been brought out by Dr McKittrick She received emetin because we thought that this was something queer, that it was not ulcerative colitis and that it was only fair to give the drug a therapeutic trial The response was as unsatisfactory as we expected that it would be Because of the failure to relieve the condi tion by any direct form of medical treatment, some form of surgery seemed the only proper method of procedure.

Dr. Sowles Dr McKittrick's evaluation of the history was very clear and logical We went through approximately the same reasoning as he did with the exception that we did not put so much stress on ulcerative colitis, we explored with a tentative diagnosis of tuberculosis At the time of operation the last 25 or 30 cm of cecum and transverse colon were very edematous and thick with acutely swollen nodes in the mesentery The sigmoid was normal to palpation, and by direct vision of the bowel we made a diagnosis of re gional enteritis and did an anastomosis of the ileum — 25 or 30 cm above the ileocecal valve — to the apparently normal sigmoid She died of mal nutrition about fifteen or sixteen days postopera tively, and I think Dr Mallory will tell you that the correct diagnosis agrees with that of Dr Mc Kittrick

Clinical Diagnosis

Regional enteritis

Dr McKittrick's Diagnosis

Chronic idiopathic ulcerative colitis.

Anatomical Diagnoses

Idiopathic ulcerative colitis, acute and chronic, with involvement of ileum
Peritonitis, acute, localized
Sepsis of operative wound
Ileosigmoidostomy

Pathological Discussion

Dr. Tracy B Mallory This case brings up the question of our ability to differentiate chronic ulcerative colitis and regional ileitis on anatomical and histological grounds Since the etiology of both diseases is completely unknown this can only be done on the basis of the morphological picture and how much reliance we can put on that is a little uncertain It is well known that ulcerative colitis may spread upward to involve the terminal ileum It is claimed that regional ileitis may spread downward and involve the colon Hence distribu tion of gross lesions does not settle the problem

The histological picture of chronic ulcerative colitis is not characteristic One sees multiple areas of ulceration, sometimes isolated, sometimes confluent, deep in the mucosa, occasionally extending down into the muscularis, with polypoid hyperplasia of the intervening islands of intact epithelium and a very marked inflammatory reaction Even in the more acute stages enormous numbers of lymphocytes and plasma cells are present, intermingled with polymorphonuclears and eosinophils, and even in the chronic stages polymorphonuclears usually persist In regional ileitis, on the other hand, although a similar non-specific inflammatory picture predominates, one does find in the majority of cases if one searches for a little while, and sometimes very easily in every section, lesions that are relatively specific, there are small focal collections of epithelioid and giant cells which sometimes simulate those seen in tuberculosis but ordinarily are less closely aggregated Similar lesions may be found in the mesenteric nodes and never show caseation, and no one has ever succeeded in demonstrating tubercle bacilli in them I have seen occasional cases of presumable regional ileitis where no such foci could be found, so I question whether they can always be counted on

In this case both the gross and microscopic pictures in the colon were perfectly characteristic of an ordinary ulcerative colitis The process in the ileum was similar, and no foci of epithelioid cells were found The mesenteric nodes were negative

Dr McKittrick Was there any slough over the ulcerations?

Dr. Mallory There was not much slough, but there were definite acute ulcerations The ulcers in the colon extended down to the rectosigmoid, and if Dr Jones could have inserted the proctoscope 2 or 3 cm farther he would have seen an ulcer

Dr Jones There was one thing that came out at autopsy that might be mentioned there was a fresh ulceration going across a suture line In other words the disease was rapidly progressing

CASE 25372

Presentation of Case

An eleven-year-old boy was admitted to the Massachusetts Eye and Ear Infirmary for swelling of the right eye and edema of the forehead of thirty-six hours' duration

Three years previously, the boy had been a patient for over a year at a tuberculosis hospital where a diagnosis of malnutrition was made, a tuberculin test was negative His intelligence quotient was 0 73 For several days before admission the patient had a mild upper respiratory infection On the day before entry his right eyelids began to swell and become red, he was restless and lost his appetite On the day of entry, the swelling extended toward the other eye and over the forehead to the hairline There was no vomiting, headache or dizziness The patient being a state ward, no family history was available

Physical examination revealed a poorly developed and nourished boy with hollow cheeks, lying listlessly in bed The skin was pale and dry There was marked swelling and redness of the right eyelid and between the eyes extending over the forehead There was tenderness over the frontal and maxillary regions The eyes showed normal movements, the corneas were clear, the pupils reacted briskly to light, the fundi were normal The throat was very red, the tonsils had been removed, there was a thick yellow postnasal discharge The cervical lymph nodes were enlarged, the axillary and inguinal ones slightly palpable The ear drums appeared normal Examination of the lungs showed diminished breath sounds on the left and no rales The heart was not enlarged and there was a diffuse mild systolic murmur over the entire precordium The abdomen was firm and not tender The knee jerks were sluggish The neck was not stiff The Kernig sign was negative

The temperature was 103°F., the pulse 108, and the respirations 22

X-ray examination showed a right pansinusitis and pus in the left frontal sinus There was bone destruction The chest was clear

Examination of the blood showed a white-cell count of 22,800 with 90 per cent polymorphonuclears and 70 per cent hemoglobin The urine was normal A blood Hinton test was positive, a Wassermann test negative A nasal culture showed *Staphylococcus aureus,* and a throat culture hemolytic streptococcus

On the second day an incision was made in the right orbit between the nasion and inner canthus Pus was found over the paper plate of the ethmoid, and a drain was inserted The temperature fell to 99°F, did not go above 100° for one week, and then rose to 101 5°, with a daily swing An x-ray film showed the right ethmoid full of pus, without evidence of osteomyelitis, and the antrum clearing Two weeks after the operation reinvestigation of the wound was made under anesthesia and no obstruction to drainage or osteomyelitis was found The fever persisted and five days later a lumbar puncture showed a pressure of 310 mm of water, active reaction to jugular pressure, a clear fluid (71 cells per cubic millimeter, with 30 per cent polymorphonuclears), protein of 50 mg per 100 cc and a gold-sol curve of 0001210000, the Wassermann test was negative

days later an external right ethmoidectomy erformed, with removal of the right middle ate.

ite of good healing of the operative wound, ld did badly during the next few weeks He l to eat, became very emaciated and was / and unco-operative. The neck was stiff, e Kernig sign positive. A *tache cérébrale* esent. The eye grounds showed myopia led veins and questionable slight swelling nerve heads, there was no choroiditis The ature was normal except for rare transitory ons

child was put on gavage feeding The howed a white-cell count of 19,000 A lum ncture during the fourth week showed und (7 cells per cubic millimeter all lym s) with a pressure of 410 mm , the protein mg per 100 cc., the sugar 83 mg., and the curve 5454431100 Another the following howed very little change. An x ray film of st showed infiltration of the left apex week later the child was still very drowsy ining feedings An x ray film of the skull osteomyelitis in the midline above the sinus The following day, thirty seven er admission, he died

Differential Diagnosis

AMES B AYER The condition on admis- s consistent with a virulent acute pansinusi ch indeed was shown by x ray I see no idence for primary infection elsewhere, al a septicemia cannot be excluded At that re was no indication of intracranial infec of a cavernous sinus thrombosis ous that was found presumably came from it ethmoidal cells, and the infection was / due to the *Staphylococcus aureus* that was l by culture from the nose. Although : was established two weeks later there ave been symptoms to suggest central system invasion, for a lumbar puncture formed which showed definite elevation ure and what I interpret as the findings septic meningitis This apparently led to thorough effort to drain the infected cells

a few weeks there was improvement in infection but signs of meningitis and of l intracranial pressure, and then late in se of the nasal infection and only just leath there was x ray evidence of osteo- of the frontal bone and also of pneumonia sequence of events and time relations are f infection of the brain from ethmoid or nus infection I should recapitulate as follows nasal infection followed by pansinusitis, ethmoid cells broken down and early epidural infection via the cribriform plate spreading of epidural infection in the anterior fossa associated with osteomyelitis of the frontal bone, occurring much earlier than shown by x-ray finally frontal lobe abscess (right?) by direct extension from an epidural abscess

The positive Hinton test and the low IQ test in a foundling suggest the possibility of congenital syphilis, which might have a bearing on the pa tient s susceptibility to nasal infection My diag noses are epidural abscess with probably right frontal lobe abscess due to *Staphylococcus aureus* pansinusitis, early pneumonia, septicemia (?) and congenital syphilis (?)

Dr Alexander S MacMillan The films taken on admission show this very definite right pansi nusitis The right side of the nose is completely blocked The ethmoid frontal and small ethmoid sinuses are full of pus, and so is the antrum With that finding and swelling over the forehead re peated x-rays were taken in an attempt to estab- lish a diagnosis of osteomyelitis over the frontal sinus It was not until about three weeks later however that a lateral view of the skull showed beginning decalcification of the overlying bone. In all this time the ethmoid cells remained filled with pus although the antrum itself drained complete ly In the anteroposterior view there is this defi nite dark area which you can see from a dis tance That is entirely different from the appear ance of the bone when the patient first came in It is quite characteristic of osteomyelitis of the frontal bone. The films of the chest show an area in the left apex that is consistent with tuber culosis

Dr Ayer I had ruled out the tuberculosis be cause of the negative tuberculin test and the course of the illness. In spite of the x ray evidence of tuberculosis I still discount this disease as ac counting for the major symptoms.

Dr Harold L. Higgins This case was pre sented on rounds as that of a child whose ethmoid infection was responding very well and yet who was going downhill As he lay there almost comatose one could not help thinking of two things juvenile paresis and marked tuberculosis probably tuber culous meningitis. Clinically we played with these two diagnoses for some time before we gave them up Against the juvenile paresis were the facts that the eyes responded very well to light that the child did not have an enlarged spleen and that there was no other sign of syphilis except mental deficiency The findings of the first lum bar puncture were quite in keeping with tubercu lous meningitis in the early stages, but we felt

that those of the subsequent lumbar punctures, where the cell counts had diminished, ruled out this disease and that possibly tuberculoma was the correct diagnosis

CLINICAL DIAGNOSES

Right pansinusitis, ? quiescent
Tuberculosis
Malnutrition

DR. AYER'S DIAGNOSES

Epidural abscess, with probably right frontal lobe abscess due to *Staphylococcus aureus*
Pansinusitis
Early pneumonia
Septicemia?
Congenital syphilis?

ANATOMICAL DIAGNOSES

Pansinusitis, acute
Osteomyelitis, frontal bone
Perforation, posterior wall, left frontal sinus
Cerebral herniation through right cribriform plate
Brain abscesses, bilateral, frontal lobes
Pulmonary tuberculosis, apical

PATHOLOGICAL DISCUSSION

DR CHARLES S KUBIK There was pus in the frontal sinuses and ethmoid cells, and the osteomyelitis which you already know about In the posterior wall of the left frontal sinus there was a perforation, and behind that, between the bone and the dura, a layer of granulation tissue There were two abscesses, one in each frontal lobe These were just beneath the surface and had fairly resistant capsules, consistent, I should say, with the duration of symptoms

Was there a culture made at autopsy?

DR. TRACY B MALLORY Yes, directly from the brain abscess, it showed a hemolytic streptococcus

DR KUBIK Cocci, in long chains, were found in sections of the walls of the abscesses

DR MALLORY The rest of the body showed virtually nothing The cultures from the heart's blood were sterile We found three or four very small tubercles, 3 or 4 mm in diameter, at the apex of one lung

DR. J H MEANS I should like to ask Dr Kubik about the pathway of entry of the organisms to the frontal lobes Was there any direct communication between the frontal lobe and the sinuses?

DR KUBIK I am not sure that I can answer that The infection was easily traced from the sinus, through the perforation, to the epidural space The dura however appeared to be intact, and there was a thin shell of brain tissue between the abscess and the meninges Such infections cross the subarachnoid space without producing a generalized meningitis, although there is usually, if not always, a local meningitis

A large proportion of brain abscesses complicating otitis and mastoiditis follow thrombophlebitis of the lateral sinus, and it is thought that retrograde infection of small cerebral veins which empty into the sinus may account for the abscess In this case, however, as in most frontal abscesses, there was no infection of the superior longitudinal sinus We say that the infection has been by "direct extension" and usually let it go at that It may be that in these cases too the infection follows very small veins, first through the dura and then across the subarachnoid space and into the substance of the brain

DR MALLORY In this case, direct infection seems probable for one of these abscesses, that on the left, which lay directly behind a perforated frontal sinus On the other side, however, the posterior wall of the sinus was intact and yet there was also an abscess behind it

DR KUBIK One thing I failed to mention was a defect of the cribriform plate on that side It is possible that this was the source of the abscess in the right frontal lobe

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THE "TOTAL PUSH TREATMENT OF CHRONIC SCHIZOPHRENIA

It has long been thought that actual hospitalization of patients with schizophrenia tends, in one sense, to add to their difficulties by overlaying their fundamental retreat from social contact into a delusional state with a "prison stupor" or a new psychosis This untoward action has been the concern of every hospital superintendent for many years, and attempts have been made in the past to so order hospital life that the idea of continued isolation is kept at a minimum This, however, has not been by any means successful, as immediately a patient enters an institution for mental disease almost all his initiative is taken from him His social contacts are even more diminished, and he becomes entirely passive to his activities He is immersed in monotony and perhaps most important, he lives in a motivation vacuum, that is, rewards and punishments disappear from his life and he is neither praised nor blamed for his conduct Life in the hospital not only furnishes a psychological retreat but also results in a physiological vacuum. It is difficult, at best, to provide adequate exercise, particularly out-of-doors, in any institution, especially for patients who are unwilling to work and have no inclination toward such activity

Although all this was well recognized, only recently has there been set forth a definite plan to overcome these undesirable factors in the treatment of patients with chronic schizophrenia Myerson[1] has suggested an amplification and synthesis of the well known methods of treatment of the chronic schizophrenic patient, the complete plan being called the "total push" method The general medical measures include physiotherapy and irradiation with ultra violet rays, exercise and games are greatly extended, the diet is made more adequate, vitamins being added, and an effort is made to increase the patient's self respect. Care is taken to insist that the patient dress, shave himself and take care of his hair Some sort of punishment or deprivation is introduced if patients do not properly care for themselves Every effort is made to praise or blame and to give just rewards or punishments

The results of this treatment of schizophrenia have been gratifying Part of the work has been carried on at the Boston State Hospital, but more recently a large number of patients have been under "total push treatment at the McLean Hospital. Tillotson[2] reports on eleven of these patients, who had been ill on an average of over twelve years and whose average hospitalization was over ten years. As a result of the treatment none of the patients were worse and many showed definite improvement There was a better contact with reality and the patients showed increasing social responsiveness, general activities, skill and co-ordination and improved mood, with some degree of improvement in their physical status One of the patients improved to such an extent in his social status that a program of re

education was begun and satisfactory progress is recorded Tillotson concludes that "if insulin and metrazol therapy are used, the total push method should be instituted in its fullest sense as an important adjunct" It is offered, however, "as a distinct method of organized, intensive, individual activation in chronic schizophrenia" In the hands of both Myerson and Tillotson this method appears to have been successful, although the time elapsed since the method was first tried is too short to give complete evaluation

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THE PUBLIC ASKS ABOUT HEALTH

The average citizen, despite his prejudices, entertains an inherent belief in and respect for the integrity and capabilities of his government's agencies He is inclined to credit them, in fact, with a general, if embarrassing, omniscience, and may be not too patient with their failures to live up to this reputation No bureau, division, office, department, commission, section or service of the federal government, according to a Treasury Department release, but receives its daily grist of queries by mail, and the United States Public Health Service has never been slighted by lack of inquiring letters

A cross section of this "fan mail" has recently been analyzed by Dr Robert Olesen, assistant surgeon general, to show the type of question that people ask about health While epidemics, public discussion of medical-care problems, announcements of new methods of treatment, and illnesses of prominent persons release a flood of inquiries, comments and suggestions and questions of general health come in at a fairly even rate

A sample is given of the types of information requested "Susceptibility of a person to rabbit fever, dirt eating, how to get rid of germ-phobia, recent discoveries in the medical world, spectacles for the blind, how to preserve life, garlic—twenty questions on its medical use, bacteria on coins, cure for cigarette habit, most healthful regions of the United States, use of bone and dried chicken gizzard for treatment of cataract, effects of eating tung nuts, health value of barracuda, eating poison ivy leaves as a preventive, method of eliminating scars, embalming fluids, what is thyphen, therapeutic uses of radio, and so forth"

Replies are prepared not only from the resources of the United States Public Health Service, including approximately 2000 reprints from *Public Health Reports* and some 400 multigraphed statements, but other federal and voluntary agencies, and occasionally medical specialists are consulted Many of the questions proposed are of course unanswerable.

Most of the frequent letters presenting "cure alls" have common characteristics They usually come from ignorant individuals, many of them elderly men and women, the cures are "quick in action, low in cost, immediate in relief, and permanent in their results", they are applicable to a number of ailments Moreover, the discoverers of the cures are almost unanimous in their willingness to receive a substantial reward, frequently varying from $100,000 to $1,000,000, for their proposed service to mankind

OBITUARY

ARTHUR THORNTON LEGG

1874–1939

The sudden death of Dr Arthur Thornton Legg on July 8, 1939, has brought a sense of personal loss to a surprisingly large number of physicians and patients, and to many medical groups—surprising, because we have rarely known a medical servant endowed with a superior mental equipment and capacity for friendship who was so completely self-effacing

Dr Legg was born in Chelsea, Massachusetts, on April 19, 1874, to Charles Edmund and Emily (Harding) Legg, and is survived by one brother, Allen H Legg, of Chelsea After graduation from the Chelsea High School in 1894, he entered Harvard College and after two years in premedical studies was admitted to the Harvard Medical School, graduating in 1900 His orthopedic internship was taken at the Boston Children's Hospital which he continued to serve in increasingly important staff positions until his death, at which time he was assistant professor of orthopedic surgery at the Harvard Medical School, surgeon to

the Children s Hospital and chief of the Harvard Infantile Paralysis Commission Clinic. For several years he was also on the staff of the Orthopedic Clinic of the Carney Hospital, being one of that small band of young orthopedic surgeons who pioneered under the leadership of Dr Joel E. Goldthwait in establishing what we believe was the first orthopedic clinic for adults in the United States He was consulting orthopedic surgeon to the Chelsea Memorial Hospital the Lakeville Sanatorium and the Massachusetts State Hospital at Canton He was a member of the Advisory Council of the Georgia Warm Springs Foundation When the state clinics for crippled children were established under the provisions of the Social Security Act be was placed in charge of the Haverhill Clinic.

Dr Legg s medical affiliations were many and included membership in the Massachusetts Medical Society, the American Medical Association the American College of Surgeons the American Orthopaedic Association, the American Academy of Orthopaedic Surgeons, the Boston and Interurban Orthopaedic clubs, the American Pediatric Society and the Society of Sigma Xi He was also elected to membership in the International Society of Orthopaedic and Traumatological Surgery but declined the honor His social affiliations were few The Harvard Club of Boston knew him well for many years and he was a member of the Star of Bethlehem Lodge of Masons in Chelsea At one time he was a member of the Vesper Country Club During the World War he was kept in this country as an essential teacher and serving under Major Robert W Lovett, did yeoman work in fitting younger surgeons for service in army hospitals in Europe and America The woods and the shore often called him in companionship most often with his brother or with Dr Edwin Wyman

For many years a seemingly self sufficient bachelor, Dr Legg was married on August 27, 1936 to Miss Marie Robinson, who was in charge of the private ward of the Boston Children s Hospital They traveled together to Labrador to the Grenfell Mission, with which his wife had been at one time connected The sadness of her untimely death on May 24 1938 left a wound which those who knew him intimately realized would never heal although he bravely and efficiently continued to meet his many medical responsibilities

Dr Legg s contributions to medical literature numbered twenty-two and he never wrote unless he had something worth while to put on paper The careful study of a series of cases of hip disease in children published in February 1910 brought him international recognition He was the first to recognize and demonstrate that the patients whose symptoms be described were not suffering from tuberculosis of the hip joint but from a deformity of growth at the epiphyseal line Although farthest from his thought or wish the osteochondritis juvenilis or coxa plana which be first described became more generally known as Legg s disease in this country, and his name is commonly linked with those of Calvé in France and Perthes in Germany, who quite independently described the same syndrome. Some of his most important contributions were as follows

The cause of atrophy in joint diseases. Am. J Orthopaedic Surg *6* 84 90 1908

The importance of the early recognition of acute arthritis of the hip-joint in infants. Boston M & S J *170* 527 1914

Tendon transplantation conclusions from a study of one hundred cases. Interstate M J *23* 333-336, 1916. (With Dr F R. Ober)

Remarks on the etiology of the flattening of the upper femoral epiphysis a study of seventy-five personally observed cases. Am. J Orthopaedic Surg *16* 448-457 1918.

Transplantation of tensor fasciae femoris in cases of weakened gluteus medius. J A M. A. *80* 242 1923

Review of the treatment of infantile paralysis after the acute stage. J Bone & Joint Surg *6* 194 203 1924

The end results of coxa plana. J Bone & Joint Surg *9* 26-34 1927

An analysis of the 1935 epidemic of infantile paralysis in Massachusetts. New Eng. J Med. *217* 507 511, 1937

We have referred to Dr Legg s outstanding characteristics the most admirable of which were his devotion to the needs of the crippled child, his reserve and his modesty His own father complained of the necessity of "pumping" him before he could learn either of his doings or his thinkings Toward this father, crippled by rheumatism for many years before his death in 1914 the son exhibited a remarkable devotion and tenderness Although his days in town were very full he slept at night at his father s home in Chelsea in order that he might constantly minister to the needs of his widowed parent s body and spirit At the chance sight of a crippled child while he was driving in an automobile the car was stopped while he sought to find the cause He was an able, careful surgeon who often called attention to his mistakes but rarely to his many successes. His diagnostic skill was extraordinarily keen, and his therapeutic judgment wise and kindly As chief of the Harvard Infantile Paralysis Commission Clinic in Boston and of the many subsidiary clinics in different parts of the State he not only showed marked organizing ability but had the

faculty of commanding the devotion and winning the affection of his subordinates Though he held strong opinions he consistently refused to be controversial He belonged to that small group of useful men who are undemanding, pleasant in companionship and seemingly quite unaware of the sterling nature of their own admirable attributes

R B O

MASSACHUSETTS MEDICAL SOCIETY

SECTION OF OBSTETRICS AND GYNECOLOGY*

RAYMOND S TITUS, M D, *Secretary*
330 Dartmouth Street
Boston

INVERSION OF THE UTERUS — A REVIEW

On June 22, 1939, the first article on inversion of the uterus appeared in the *Journal* Actual case reports of this complication have appeared in each issue up to and including the September 7 number It seems worthwhile to record the impressions of this condition as represented in these twelve cases

In the first place, the ease with which these cases have been collected would lead one to infer that it is not the extremely rare condition that it has always been thought to be Nothing of value can be deduced as to the etiology of the condition Inversion of the uterus appeared as a complication associated with both normal and operative labors It happened where there had been no undue attempts at manipulation by the Credé method, however, in one or two cases the possibility of too forceful manual attempts at placental extrusion might have been predisposing factors There was one case in which the cord was extremely short, but such a finding is not uncommon without this complication It was thought that the indiscriminate use of posterior pituitary extract might have played an etiologic part in one case, but no definite conclusion could be drawn Some of these cases were associated with adherent placentas but in others this condition was not present

Hemorrhage was not constant, and although shock associated with the reposition of the uterus was present in some cases, it was not a constant symptom Sepsis was not invariable

The only striking feature that review of these cases reveals is that immediate diagnosis and immediate reposition of the inverted uterus lend to simplicity in treatment and smoothness in convalescence Where sudden hemorrhage is a marked symptom, its cause must be immediately determined and corrected, when this is done under careful asepsis, the reposition of the uterus is a simple matter

Among this series were several cases of chronic inversion, some with and others without sepsis The treatment of chronic inversion depends on whether sepsis is present and on the judgment of the individual operator In some cases of chronic inversion the uterus may be successfully replaced by a vaginal operation, in others hysterectomy is required

If inversions of the uterus are immediately diagnosed, transfusions given when indicated and the uteri manually replaced, mortality from this condition should be very low

*A series of selected case histories by members of the section will be published weekly Comments and questions by subscribers are solicited and will be discussed by members of the section.

DEATHS

DAVIS—ERNEST L DAVIS, M D, of Springfield, died September 10 He was in his sixty-eighth year

Dr Davis received his degree from Tufts College Medical School in 1906 and held fellowships in the Massachusetts Medical Society and the American Medical Association He was a member of the American Roentgen Ray Society, the New England Roentgen Ray Society and a former president of the Springfield Academy of Medicine

HOWARD — CHARLES T HOWARD, M D, of Hingham, died September 6 He was in his sixty-ninth year

A native of Hingham, he attended Adams Academy, Quincy, and entered Harvard University with the class of 1895 He received his degree from Boston University School of Medicine in 1898 Dr Howard began practice in Watertown shortly after graduating from medical school and later moved to Hingham.

He was a fellow of the Massachusetts Medical Society, the American Medical Association and the American College of Surgeons, and was a member of the Massachusetts Homeopathic Medical Society Dr Howard was professor emeritus of surgery at Boston University School of Medicine, and was former surgeon-in-chief of the Massachusetts Memorial Hospitals

His widow, three daughters and two sons, survive him.

MISCELLANY

RÉSUMÉ OF COMMUNICABLE DISEASES IN MASSACHUSETTS FOR JUNE, 1939

DISEASES	JUNE 1939	JUNE 1938	FIVE YEAR AVERAGE
Anterior poliomyelitis	3	1	5
Chickenpox	850	1286	1178
Diphtheria	8	5	27
Dog bite	1647	1410	1333
Dysentery, bacillary	1	38	12
German measles	75	79	1381
Gonorrhea	415	337	461
Lobar pneumonia	236	293	278
Measles	3927	2216	2700
Meningococcus meningitis	5	4	8
Mumps	501	877	689
Paratyphoid B fever	7	2	10
Scarlet fever	441	1164	816
Syphilis	417	412	438
Tuberculosis, pulmonary	285	383	319
Tuberculosis, other forms	37	46	39
Typhoid fever	10	2	6
Undulant fever	4	4	3
Whooping cough	551	477	639

*Based on figures for preceding five years

RARE DISEASES

Anterior poliomyelitus was reported from Newton 1 Somerville, 1 Quincy 1 total, 3.

Diphtheria was reported from Boston 3 Lawrence, 1 Lynn 3 Waltham, 1 total 8

Dysentery, bacillary was reported from Haverhill, 1 otal 1

Infectious encephalitus was reported from Braintree, 1 Brockton 1, total 2.

Meningococcus meningitus was reported from Boston 1 Cambridge, 1 Dudley 1 Lowell 1 Worcester, 1 total, 5

Pfeiffer bacillus meningitus was reported from Lowell, 1 otal, 1

Paratyphoid B fever was reported from Boston 2 Concord, 1 Malden, 1; Medford 1 Pittsfield, 1 Plymouth 1 otal, 7

Pellagra was reported from Chelsea 1 Easthampton, 1 Waltham 1 total, 3.

Rocky Mountain spotted fever was reported from Chat am 1 total, 1

Septic sore throat was reported from Boston, 3 Law nce, 1 Millbury 1 Quincy 1 Somerville 1 total, 7

Tetanus was reported from New Bedford 1 total 1

Trachoma was reported from Boston, 3 Malden, 1, otal 4

Trichinosis was reported from Boston 2 total 2.

Typhoid fever was reported from Attleboro 1 Boston, (student in Boston home in Pittsfield) Brockton, 3 Brookline, 1 Cambridge, 1 Chicopee, 1 Dartmouth 1 Reading 1 total 10

Undulant fever was reported from Gardner 3 Monroey 1 total, 4

The reported incidences of anterior poliomyelitus, infectious encephalitus, and meningococcus meningitus were not remarkable.

Typhoid and paratyphoid B fevers showed the usual seasonal increase within expected limits.

Diphtheria had a reported incidence for the month lower than the average for one day in 1929

Dog bite continued to be reported in record high figures, although for the third consecutive month there were no cases of canine rabies.

Scarlet fever lobar pneumonia chickenpox, mumps and German measles were reported below the five year average.

Measles, although showing an expected decrease under the previous month was reported above the five year aver e.

Pulmonary tuberculosis and tuberculosis (other forms) continued to be reported in encouragingly low levels.

The reported incidence of whooping cough was not remarkable.

POSALS FOR AMENDMENT OF THE AGNER BILL (S 1620)

On August 15 1939 The Committee of Physicians for the Improvement of Medical Care issued a statement containing proposed amendments to the Wagner Bill (S 1620) The following is a reprint of the statement, with certain deletions.

* * *

The national movement for improvement of health services and provision of better medical care for the people which has been gaining force in the last years, has now reached a point where legislation is pending Hearings before the Senate subcommittee have been held on the Wagner Bill which was the subject of the last statement issued by the Committee on May 5 1939 The bill received the general support of consumer groups (farm, women's organizations and so forth) and has subjected to criticism sympathetic and otherwise, by professional groups of all kinds. The subcommittee of Senate Committee on Education and Labor, before these hearings were held, has submitted a report. In report it is stated "The committee will continue its of S. 1620 so that a definitive report on the proposed lation can be submitted soon after the beginning of next session of Congress. In addition to quote from other section "We do not at this time have solution all the problems which have developed in the study of bill but we are confident that solutions will be found proceed with our study and as we continue to receive critical advice and assistance which we welcome from lic and professional groups and individuals who have sured us of their co-operation." In the light of these ings and this report it is not only possible but necessary to take a more concrete position on this bill and on legislation which may be proposed.

The Committee of Physicians wishes to assert sympathy with the general purposes of the Wagner and with the program of the Technical Committee, which the bill is based. It appreciates the attitude which the Senate subcommittee conducted the hearings the interest and receptiveness which its members displayed the lack of prejudice which characterizes their analysis the problem under consideration and the evidence which was presented to them, and the intelligent open minded of the comments and conclusions of their report.

Committee of Physicians recognizes that certain compromises were made in this first legislative draft to meet jections that had been raised against the Technical Committee's program and to bring its proposals into formity with the existing complex federal machinery trusted with the administration of health The hearings have demonstrated that these compromises have achieved no useful purposes and that they may jeopardize some the most desirable aims of health legislation, especially continuous improvement of the quality of medical ca The Committee of Physicians, therefore, recommends that the Wagner Bill (S 1620) be amended or redrafted conformity with the suggestions presented in this statement.

GENERAL PRINCIPLES

1 There can be no doubt of the fact that good medical care is not now available to a large portion of the population of the United States This has been satisfactorily established by repeated surveys including that of the U Public Health Service which was the basis of the Technical Committee's report before the National Health Conference It has been supported by the testimony of representative members of the medical profession as given in the American Foundations report *American Medicine* (1937) The existence of this medical need was not challenged in the National Health Conference held to July 1938 under the auspices of the Interdepartmental Committee.

2. There can be no doubt that if good medical care is to be given to the people of this nation the government (local state and federal) must assist in devising programs and sharing the expense. Many of the states are likely to be unable successfully to finance improved medical care for their people. Experience has demonstrated that federal participation can best be effected by grants-in-aid to the states, carefully protected by the establishment of standards which must be met by the states in order that they may qualify for the receipt of grants. Although for the sake of co-ordination and to prevent abuses these pre

rogatives should be retained by the federal government, responsibility for the institution and administration of programs should reside in the states as the Wagner Bill provides In utilizing these two principles, the Wagner Bill is sound

3 The provision of moneys by the federal government to assist in medical care at once involves the Government in the setting up of suitable machinery to see that the moneys so appropriated are expended in such a way as not only to improve the medical care offered to the people, but to maintain and improve the standards of the institutions and individuals participating in this care. Only by insistence upon this principle can the prudent use of public moneys be guaranteed Although provisions for this purpose are included in every title of the Wagner Bill, there are certain features in these titles and in the bill as a whole that militate against the achievement of these objectives, namely

I Divided control in the planning and execution of the program is incompatible with any sound program for national health There should be unified federal health authority

II As a corollary to this there should also be a General Health Council This council should have authority to establish and enforce professional standards in order to insure a good quality of medical care The constitution of the Council should be defined in the bill

III The establishment of the unified health authority and the General Health Council should be the first step taken in connection with the institution of a national health program

IV Although special measures, such as those contained in Titles V, VI, and XII [those concerning maternal and child health, public health work, and hospitals and health centers] of the Wagner Bill may be expedient, the objective should be to provide in every community a unified program of health service and medical care which will meet the standards approved by the General Health Council

V The lack of provision for support of medical education and research may cut the ground from under good medical practice. The achievement and maintenance of high standards of medical education and research require additional funds

SPECIFIC PROPOSALS

1 There must be a unified federal authority responsible for the institution and execution of all parts of the Health Program

2 A General Health Council should be established which shall have the power to define and supervise standards of medical education, research and care whenever it is proposed to make federal grants-in aid and these shall not be made without its approval

a The Surgeon General of the United States Public Health Service should be the chairman and executive officer of the General Health Council

b Appointments to the General Health Council should be made by the President with the advice and consent of the Senate in such a manner that representation of special interests would be subordinated to the more important point of assembling outstanding persons with imagination, intelligence, critical judgment, and expert knowledge in public health and medicine.

c The Council should be composed of eight persons in addition to the executive officer, a majority of whom should hold degrees of Doctor of Medicine

d The term of office should be sufficiently long to permit members of the Council to look upon their membership as a career If the term of office is specified, it should be provided that members may be reappointed when their terms expire.

e Members of the General Health Council should give full-time service. Remuneration for these services must therefore be generous enough to attract persons of highest quality

f The Council will be charged with defining and supervising the standards of all institutions and services aided by federal grants

g Whenever the Council finds, after reasonable notice and opportunity for hearing to the state agency concerned, that there has been a failure on the part of such agency to comply substantially with any requirements of the Council, the Council shall recommend no further payments to such state for that purpose until it has been satisfied that there is no longer any such failure to comply

h Scientific and technical subcommittees covering the several fields for which the General Health Council is responsible should be constituted under the authority of the Council to aid in its task of defining and supervising standards

3 Within a reasonable period of time, the several services provided under the bill should be consolidated in one state health agency Pending this consolidation, the department of health in each state should be the clearing agency for the federal grants-in-aid made available upon recommendation of the General Health Council.

4 Under the supervision of the General Health Council, provisions should be made to continue present federal health activities, to expand specific activities of proved merit, and to co-ordinate and merge all such activities into a future general program of health service and medical care

It might be advisable to incorporate certain basic principles in the health legislation.

a Hospitals or health centers must not be constructed to meet a temporary local condition in a manner or place that will not serve the ultimate purpose of a comprehensive program

b They should not be constructed where there are existing facilities, public or private, that are not utilized to their effective capacity, provided that these facilities can be made available at a reasonable cost and provided that these facilities do or can be made to conform to the standards established by the General Health Council

c Provision should be made, with proper safeguards for the Government, for the rehabilitation of existing public and private facilities provided that they do or can be made to conform to the standards established by the General Health Council

d It is not consistent with good medical practice to deny a large group of physicians access to facilities essential for the practice of good medicine.

As stated in the Committee's last statement, May 5, 1939 "The hospitals must be staffed by qualified physicians and surgeons and no person should be allowed to assume professional obligations for which he has not demonstrated competence. Standards similar to those of the American boards for certification of physicians as specialists might be established. If standards of competence are established as qualifications for appointment to the staffs of these hospitals and centers, every effort should be made to permit

those who can meet these qualifications to participate in the activities of these hospitals and centers and to utilize their facilities. Under the present system, in many communities throughout the country highly competent young surgeons and specialists are excluded from the local hospitals which although presumably quasi-public, philanthropic institutions are controlled by small groups of physicians and surgeons virtually as personal vested interests. This tends to impair their educational value, to deter physicians from taking full advantage of their facilities, and discourages highly trained men from establishing themselves in practice in these communities."

5 Certain general principles which must govern the constitution of general programs for medical care should be incorporated in the bill.

a If a program to provide care for the medically needy is to function, it must be predicated upon the total population requiring service with payment estimated on a per capita basis

b No arbitrary limitations should be placed upon the states to determining the groups of the population that may be included in these programs or the methods that may be employed to finance these programs.

c An integrated program of health service and medical care should include adequate public-health services under competent control the services of an individual physician including office and home care co-ordinated services of specialists and consultants with reference to the patient availability of modern diagnostic and therapeutic facilities including hospitalization when needed.

6. Federal grants-in-aid to states for disability benefits should be made contingent upon the establishment of satisfactory provisions for the medical care of the beneficiaries. But the power to pass upon the adequacy of the medical services available to minimize disability among those covered in a state plan and to make allotments of grants-in-aid must rest with the Federal Health Authority acting under the direction of the General Health Council and not with any other board

7 It is imperative that provisions be made in a special title of the bill for general medical education and research. Grants for these activities should be made by the General Health Council upon direct application from universities, other educational or research institutions and individual investigators, to Federal authority

NOTE

At a meeting of the Governor and Council held Wednesday August 23 the appointment of Dr Frank M Vaughan of Boston to the Board of Registration in Medicine was confirmed. Dr Vaughan graduated from the Massachusetts College of Osteopathy in 1905 and was appointed to the Board of Registration in Medicine in July 1923 to fill the vacancy caused by the resignation of Dr Matthew T Mayes of Springfield In July 1925 Dr Vaughan was elected secretary of the Board and was re-elected secretary each year until the expiration of his term in 1931

NOTICES

TUMOR CLINIC, BOSTON DISPENSARY

Each Tuesday and Friday morning 10·00 to 12.30, there is a meeting of the Tumor Clinic of the Boston Dispensary a unit of the New England Medical Center Neoplasms of various sorts are seen and discussed and when there is an indication, are treated with radium of high voltage x-ray Physicians are invited to visit this clinic. They may bring patients for aid in diagnosis or may refer patients to the clinic following which a report will be returned to the referring physician. A limited number of beds are available for diagnostic study and for treatment.

SUFFOLK CENSORS' MEETING

The censors of the Suffolk District Medical Society will meet for the examination of candidates at the Boston Medical Library 8 Fenway Boston, on Thursday November 2, 1939 at 4·00 p.m.

MILTON H CLIFFORD M D., *Secretary*

AMERICAN PUBLIC HEALTH ASSOCIATION

Thirty-five hundred health officers nurses engineers, school physicians, laboratory directors and other health specialists will attend the sixty-eighth annual meeting of the American Public Health Association and meetings of related organizations in Pittsburgh, Pennsylvania beginning Sunday October 15 and ending Friday October 20

Every state in the Union Canada Cuba Mexico and many European countries will send their health leaders to participate in a scientific program embracing the official public health activities of the North American continent.

On Sunday October 15 the sixth Institute on Public Health Education begins. The Institute continues on Monday October 16, and the International Society of Medical Health Officers, the American School Health Association the Association of Women in Public Health and the National Organization for Public Health Nursing also meet. Five conference groups convene Monday state laboratory directors state sanitary engineers municipal public-health engineers directors of local health services and state directors of public-health nursing

Six general sessions throughout the week will engage the attention of all delegates. "Medical Care," "Cancer" "Professional Education" and "The American Way as Seen from Abroad are among the subjects chosen for the general assemblies.

The ten sections of the Association have arranged an extensive series of joint and individual meetings covering topics of interest to health officers laboratory workers vital statisticians, industrial hygienists, public health engineers, nutritionists, child hygienists public health education experts, epidemiologists and public health nurses

Other organizations meeting during the week are the Pennsylvania Public Health Association the Tri-State Food and Health Officials the American Social Hygiene Association Delta Omega and the American Association of State Registration Executives.

Headquarters will be the William Penn Hotel. The preliminary program has been reprinted from the August issue of the *American Journal of Public Health* and may be obtained from the American Public Health Association 50 West 50th Street New York City

SOCIETY MEETINGS AND CONFERENCES

CALENDAR OF BOSTON DISTRICT FOR THE WEEK BEGINNING MONDAY SEPTEMBER 18

TUESDAY SEPTEMBER 19
10 a.m.–12:30 p.m. Boston Dispensary tumor clinic

FRIDAY SEPTEMBER 22
10 a.m.–1.30 p.m. Boston Dispensary tumor clinic

SATURDAY, SEPTEMBER 23

*10 a m–12 m Staff rounds of the Peter Bent Brigham Hospital Conducted by Dr Soma Weiss

Open to the medical profession

SEPTEMBER 15–28 — Pan Pacific Surgical Association Page 863 issue of November 24

SEPTEMBER 19 — Lawrence Cancer Clinic Page 400 issue of September 7

SEPTEMBER 29–30 — New England Surgical Society Beverly and Salem

OCTOBER 13 — Pentucket Association of Physicians 8.30 p m Hotel Bartlett Haverhill

OCTOBER 15–20—American Public Health Association Page 441

OCTOBER 23–NOVEMBER 3 — New York Academy of Medicine. Page 977 issue of June 8

FALL, 1939 — Temperature Symposium Page 218 issue of February 2

DECEMBER 2 — American Board of Obstetrics and Gynecology Page 1019 issue of June 15

JANUARY 6 JUNE 8–11 1940 — American Board of Obstetrics and Gynecology Page 160 issue of July 27

MARCH 7–9 1940 — The New England Hospital Association Hotel Statler Boston

MAY 14 1940 — Pharmacopoeial Convention Page 894 issue of May 25

JUNE 7–9 1940 — American Board of Obstetrics and Gynecology Page 1019 issue of June 15

DISTRICT MEDICAL SOCIETY

SUFFOLK

NOVEMBER 2 — Censors meeting Page 441

BOOKS RECEIVED FOR REVIEW

Illustrations of Regional Anatomy E. B Jamieson Second edition Seven sections, 305 pp Sections I to V inclusive, Edinburgh E & S Livingstone, 1937 Sections VI and VII, Baltimore The Williams & Wilkins Co, 1939 Complete set, $15 00

Nitrous Oxide-Oxygen Anesthesia McKesson–Clement viewpoint and technique F W Clement. 274 pp Philadelphia Lea & Febiger, 1939 $4 00

The New International Clinics Original contributions clinics and evaluated reviews of current advances in the medical arts Edited by George M Piersol Vol 3, N S 2 332 pp Philadelphia, Montreal and New York J B Lippincott Co, 1939 $3 00

Brucellosis in Man and Animals I Forest Huddleson 339 pp New York The Commonwealth Fund, 1939 $3 50

The Rectum and Colon E Parker Hayden 434 pp Philadelphia Lea & Febiger, 1939 $5 50

Baptism of the Infant and the Fetus An outline for the use of doctors and nurses J R. Bowen Fourth edition 12 pp Dubuque The M. J Knippel Co, 1939 25c.

BOOK REVIEWS

Medical Microbiology Kenneth L Burdon 763 pp New York The Macmillan Co, 1939 $4 50

The author succeeds in giving a graphic picture of all the different types of micro-organisms that cause disease in man

The history of their discovery, the proof of their infectiveness, each for a particular disease and their classification, with a scheme of their mutual relations, if any, are set forth in clear and interesting fashion Then follow chapters on the protozoa, the spirochetes and rickettsiae, the fungi, molds and yeasts and the mold like higher bacteria, the filterable viruses and the bacteriophages The true (or lower) bacteria, their classification, how they live, their chemical activities and how they may be killed by physical and chemical means, conclude Part One.

Part Two is devoted to the laboratory study of micro-organisms

Part Three is headed "Infection and Resistance." It describes how the organisms may get into the body, the reaction of the body to infection, the development of immunity and the use of bacterial products for specific treatment.

Part Four covers the microbiology of important infectious diseases The latter are arranged chiefly according to the part of the body affected, without regard to the type of organism, although the virus, fungous and protozoan diseases each have a chapter

Appendices A, B, and C give details of important technical procedures not covered in the text. Appendix D is a list of journals and textbooks that give further information about the various subjects mentioned Appendix E contains review questions for each chapter, which are very useful for classroom discussion The index is unusually full and complete. Boldface type is used to indicate pages where may be found the carefully selected illustrations

The book is an excellent text for students of medicine, dentistry, nursing and public health It is also a valuable reference book in regard to any infectious disease. The use of this book should give the student of bacteriology a wider outlook and lead him to experiment in some different field, for instance, that of the fungi

Physiology of the Uterus With clinical correlations Samuel R. M Reynolds 447 pp New York and London Paul B Hoeber, Inc, 1939 $7 50

This book gives a very clear presentation of the various physiologic activities of the uterus. It considers one at a time the various changes that occur and why they occur A description of the motility of the uterus and tubes gives fundamentals which are necessary for the understanding of the further chapters on the changes taking place during various types of stimulation Considerations of the effect of distention of the uterus and the changes occurring after ovariectomy and supravaginal or total hysterectomy are enlightening The author enlarges on the physiology of the uterus during pregnancy and clearly discusses the reasons for the onset of labor The chapters on the vascular and lymphatic supply and that on the innervation are all worthy of careful scrutiny The metabolism of the uterus is well presented It is the reviewer's conviction that the clinical correlations are not so well presented as are the discussions of the physiology Furthermore, many workers will not agree with his conclusions in regard to the efficacy of the hormones as therapeutic agents, however, he ably supports these by the laboratory and clinical evidence of others

For the clinician a small paragraph at the end of each chapter summarizing the pertinent facts would be of great value. Many of the findings are difficult to remember correctly, and a short summary of the important ones would certainly increase the usefulness of this excellent book.

Biochemistry for Medical Students William V Thorpe. 475 pp Baltimore William Wood & Co, 1939 $4 50

During recent years a great number of texts have appeared which deal with biochemistry as a medical subject. Biochemistry today plays an important role in modern medicine and in medical instruction in America Whether the part assumed by biochemistry in this country is "top-heavy" and may at times mislead the investigator

he direct pursuit employed in the experimental meth- is not a question or a subject for a review On the r hand, in England biochemistry as a subject in medi- instruction has just begun in recent years to assume an ortant part in the curriculum with an effort to bal- : its importance and to give it proper place without emphasis. These facts must be considered when re ing British textbooks of biochemistry for the medical ent.

'ith this in mind, the book by Thorpe presents in a matic way practically all that needs be known in bio- istry for the average medical student. It is lucid and lear concise and informative, and easy to understand. 'o the American reader it can be recommended as an ad- mct to the more detailed texts already present in this ountry The book is an excellent presentation and re iew of biochemistry and is more than a bird s-eye view f the subject. it cnntains an excellent index and bib- ography and should prove serviceable to the phynician as ell as to the inquiring student.

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nests of Lucina The story of obstetrics Palmer Find ley 421 pp Boston Little, Brown & Co 1939 $5 00

Dr Findley has given the medical profession a most teresting fascinating story of obstetric practices from e early stages to the present time. The ancient folklore mbined with the ignorance and mysticism of the past akes absorbing reading. The book is illustrated with ll-chosen reproductions showing early obstetric pro- dures and also pictures of the men who have made his- y in obstetrics. Dr Findley brings the story of ob- tries up to the time nf J Whitridge Williams who died 1931

In the second part of the book he shows in a most in- esting manner how the study of anatomy was gradu y developed, the development of the forceps and the tus of the midwife, and there is a very comprehensive apter on the history of puerperal fever He closes with ull historical account of the development of the cesarean eration

The book contains an excellent index and a full bib- graphy

Dr Findley s book is the result of a tremendous amount research and he has put his facts together in a charm : way for which those who are interested in the devel- nent of obstetries must be truly grateful

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' and Internal Secretions A survey of recent research. Edited by Edgar Allen. Second edition 1346 pp. Baltimore The Williams & Wilkins Co., 1939 $12.00.

he second edition of this book is a remarkably stimu- ng survey of a difficult subject. it is no easy matter to press an account of increasingly new experimental lence on sex and internal secretions into the compass volume of thirteen hundred pages yet this task has n accomplished. The twenty-four contributing authors, active in research in this field give an up-to-date ount of the subject matter and address themselves to e readers who may be seriously studying the subject the first time as well as those engaged in postgraduate k. Dr Allen in his preface, writes As in the first ion no attempt has been made to standardize various ters they appear with their authors style uncramped. ctive choice of new work and elimination of overlaps ieen chapters have been aided by complete outlines oved before starting revision. From several points few therefore this second edition is the product of nwork.

The book is divided into five sections, each section de veloped under several chapters. The topics are. "Biologi- cal Basis of Sex" "Physiology of the Sex Glands, Germ Cells and Accessory Organs" Biochemistry and Assay of Gonadal Hormones" The Hypophysis and the Gonad otropic Hormones of Blood and Urine in Relation to the Reproductive System" "Additional Factors in Sex Functions and Endocrine Applications in Man." At the end of each chapter there is a list of important references. There is an especially good index. The illustrations are well drawn and clear

The present work establishes a high standard in this field of investigation, and it is to be hoped that continued support in this direction will come from the Committee for Research in Problems of Sex of the National Research Council whose grants have made possible much of the work herein contained.

Biographies of Child Development The mental growth careers of eighty four infants and children A ten- year study from the clinic of child development at Yal University Part 1 by Arnold Gesell Part 2 by Catherine S. Amatruda Burton M. Castner and Helen Thompson. 378 pp. New York and London Paul B Hoeber Inc., 1939 $3.75

Are there certain personal behavior patterns in infants and small children — individual traits actions or reac- tions — which are prophetic of what the future char acteristics of such children may be? Dr Gesell and his co-workers say "Yes," and they have been engaged with the question for many years. Indeed, in many instances their forecasts have been strikingly borne out so regularly that the correctness of their inferences is beyond doubt. In this book some of the reports deal with cases originally considered in 1928 in the senior author s *Infancy and Human Growth* The other case records are new. Al- together eighty-four growth careers are presented.

It may be readily granted that these studies are of great value to psychologists of infancy and childhood but it seems equally true that there are as yet very few who are sufficiently trained to evaluate traits with anything like the certainty displayed by this group of workers. As matters now stand the data seem too abstruse to permit of any very wide clinical application, however much such application is to be desired. Emphatically this is a book for the specialist among specialists but Gesell and his associates are to be commended for thus breaking ground.

The Organism A holistic approach to biology derived from pathological data in man Kurt Goldstein. 533 pp New York American Book Co., 1939 $3.20

Thus book is the result of observations on patients with lesions of the brain suffered during the World War The first German edition appeared in 1934 and the English edition is essentially a translation of it, including for the first time references to American publications pertinent to the subject matter The author s defense of his spe cific theory — the holistic approach to the biology of the organism — with a certain fanaticism, coupled with his persistent use of the personal pronoun "I" and his iconoclastic attitude toward such concepts as inhibition, antagonism, and so forth Is hardly designed to enlist a reader s prolonged interest The point of view of the author is stimulating in many places throughout the book, and yet there is altogether too much verbiage clothing the simple morphological facts which he presents for consideration.

Preclinical Medicine Preclinical states and prevention of disease Milford W Thewlis 223 pp Baltimore The Williams & Wilkins Co, 1939 $3 00

The idea of this book is splendid for it deals with the ideal of future medicine After all, what physicians aim for is the prevention of disease. This book is a pioneering attempt to consider a very difficult subject, it tries to combine what is known about such fundamental scientific disciplines as genetics, constitution and heredity with predisposition to various illnesses It is natural in such an effort—and this is obviously well realized by the author—that the early symptoms and signs of disease must frequently be included The difficulty with the subject lies in the fact that in many conditions, particularly in chronic diseases, not much is known of causative factors It is also this lack of accurate information which probably accounts for the fact that the organization of the book is sometimes complicated, thus, there is a distracting discussion of certain endocrine problems under the chapter dealing with the prevention of cancer, a discussion which properly belongs where it is because not enough of the subject is known to warrant a separate chapter The reviewer thinks that this first attempt to consider a most important field of knowledge is well done considering the vast gaps in knowledge which confronted the author Although the author has included all present available knowledge, it is to be hoped that more knowledge will be at hand for subsequent editions As an early attempt in an important subject, this book is to be commended It should act as a stimulus to those who are seeking for the causes of disease, it has a point of view toward the prevention of disease which can be highly recommended to practicing physicians

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Manual of the Diseases of the Eye For students and general practitioners Charles H. May Sixteenth edition, revised with the assistance of Charles A Perera 515 pp Baltimore William Wood & Co, 1939 $4 00

This manual is a time tested reference book for general practitioners and medical students The present edition brings the subject up to date. It condenses a mass of material into a small volume, with emphasis on the common affections of the eye and purposeful omission of rare conditions and theoretical disputations That it has accomplished its original purpose of being a handbook for a large number of practitioners is attested by the facts that this is the sixteenth American edition and that there are no less than forty two foreign editions in nine different languages The present edition keeps up the manual's tradition of brevity and practicality An abundance of pictures, several of which are new, adds greatly to the purpose of the book

The necessary superficiality of the book precludes its use as a text for ophthalmologists and the dogmatism which is unavoidable in a manual may annoy one who is a specialist in the subject Thus one is taken aback to read the unqualified but wholly questionable statement that, in congenital color blindness, 'the color sense can be developed, if training is begun at a sufficiently early period of life." It is also difficult to understand why no mention is made of sutures in the otherwise relatively lengthy description of cataract extraction

These and other similar defects are, however, of minor importance and in no way invalidate the book as a handy and relatively complete reference book for non-ophthalmologists

Endocrinology in Modern Practice William Wolf Second edition, completely revised 1077 pp Philadelphia and London W B Saunders Co, 1939 $10 00

Considering the wide area of medicine which the author is attempting to survey and taking into account the further fact of the increasing complexity of the experimental results of investigators in this field, it may be said that he has achieved tolerable success in this second, revised edition of his book New material has been added on protamine–zinc insulin, hypoglycemic states, endometrial suction biopsies, the autonomic nervous system and the vitamins There is a chapter on diagnostic procedure, and one on the description and dosage of available endocrine products

The author gives an adequate, logical account of the anatomy, embryology, histology, biology and physiology of each endocrine organ before dealing with its diseases There are seven chapters devoted to the consideration of the endocrine aspects of non-endocrine diseases The tabular summaries and the illustrations are good

Criticisms which the author may be ready to accept concern, first, his attempt to be too comprehensive and, second, his deliberate omission of references to the more important papers in the various fields considered

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Diseases of the Nose and Throat Charles J Imperatori and Herman J Burman Second edition revised. 726 pp Philadelphia, London and Montreal J B Lippincott Co, 1939 $7 00

The second edition of this book is a considerable amplification of the original textbook published three years ago By increasing the number of pages and illustrations the book has been brought up to date and revised in a more thorough manner This book should continue to prove extremely valuable to the postgraduate student and specialist who will find in it a most comprehensive consideration of rhinolaryngological conditions Operative procedure in particular are clearly described and profusely illustrated The somewhat encyclopedic arrangement of the book makes it particularly suitable as a reference work and because of this the reviewer cannot enthusiastically subscribe to the book's intention expressed in the first paragraph of the preface 'To answer questions for either the general practitioner or the senior medical student.' Readability has been sacrificed in the interests of comprehensiveness, and the somewhat impersonal style will fail in some measure to hold the interest of anyone but the specialist.

Les Erreurs et les Fautes en Urologie L. Stromınger 176 pp Paris Masson et Cie, 1939 45 Fr fr

This excellent book is entirely devoted to the errors in the diagnosis and treatment of diseases of the kidney, pelvis, ureter, bladder, urethra and prostate There are no illustrations or statistics, but this is adequately compensated by the amount of information one finds in the text. The author must have given a great deal of time and care to the writing of this book, for it appears that not a single fact has been omitted in regard to the possibility of making an error in the care of patients with diseases of the urinary tract.

A chapter each is devoted to the relation between urology and surgery and to the errors in urological diagnosis, prognosis and surgery One chapter is on errors in roentgenological diagnosis and is extremely well written The book is stimulating on account of its frankness and is well worth reading

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EARLY RECURRENCE OF SULFAPYRIDINE-TREATED TYPE I PNEUMOCOCCAL PNEUMONIA*

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THAT sulfapyridine is an effective agent in the treatment of pneumococcal pneumonia has been established by several workers.[1-4] Nevertheless, the data accumulated are insufficient to enable physicians and investigators to state conditions under which its use will be optimal and what untoward side effects may be expected The following case is reported because it presents the unusual observation of sulfapyridine-treated pneumonia recurring two weeks after recovery It is all the more unusual because it is the only recurrence of pneumonia with a homologous pneumococcus that has occurred in the Cincinnati General Hospital in the past three years During that time over 1200 cases of typed pneumococcal pneumonia have been observed

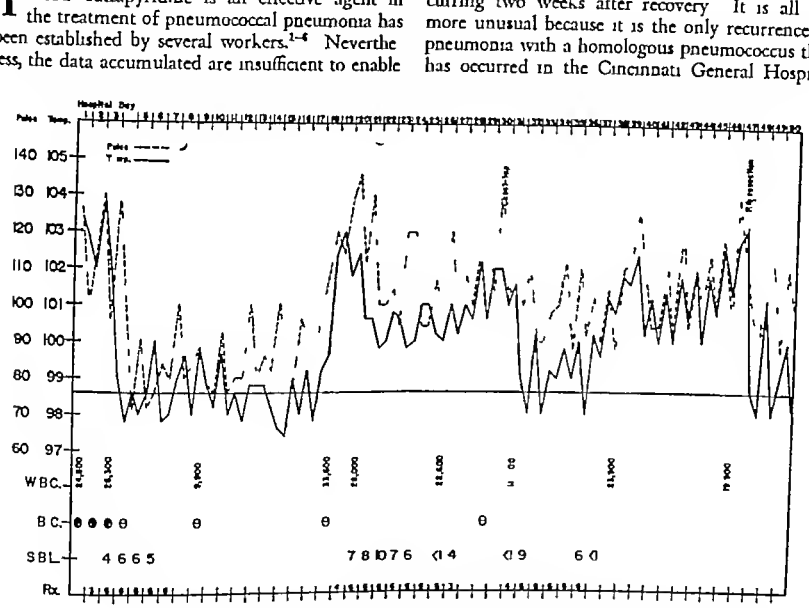

FIGURE 1 *Patient J B Maximum Minimum Pulse and Temperature Chart*

W.B.C white blood count B.C blood culture (+ positive and − negative) S.B.L. sulfapyridine blood level in mg per 100 cc (Marshall method) Rx sulfapyridine gm per day

CASE REPORT

J B. (C.G.H. 111 623) a 59-year-old sheet metal worker was admitted to the hospital January 9 1939 complaining of a cold with cough and pain in the chest of 6 days duration For 1 month the patient had suffered from a

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non productive cough, but 6 days before admission felt worse and went to bed He had no chill He developed pain in the right chest, and the cough soon became productive of greenish yellow sputum, containing no blood

Physical examination showed a well-developed and well nourished old man, lying in bed, acutely but not critically ill The temperature was 103 4°F, the pulse 120, respirations 24 and blood pressure 114/70 (Fig 1) The skin was dry and warm, and there was no cyanosis There was a mucopurulent nasal discharge. The tongue was coated The pharynx was a little reddened There were typical signs of consolidation over the right upper lobe, confirmed by x ray examination (Fig 2) The remainder

FIGURE 2 *X ray Photograph of Chest Two Days after Admission*

of the lung fields were clear The heart was normal The abdomen was slightly distended The extremities were not remarkable.

The admission laboratory examination showed a red cell count of 5,390,000, the hemoglobin was 14 gm per 100 cc. and the white-cell count 24,800 with 91 per cent neutrophils, 5 per cent lymphocytes and 4 per cent monocytes, the red blood cells and platelets appeared normal The urine contained an occasional white blood cell but was otherwise not remarkable. The sputum was mucopurulent, and contained many Type 1 pneumococci The blood contained 6 colonies of Type 1 pneumococci per cubic centimeter

The patient was given 2 gm of sulfapyridine at 7 o'clock the evening of the 2nd hospital day, at which time the blood contained seventy two colonies of pneumococci per cubic centimeter From then on 1 gm was given every 4 hours day and night for 5 days, making a total of 34 gm On the 3rd day a broth culture of the blood was positive, but there were no colonies on a plate. On the 4th day the blood culture was negative, and one taken on the 8th day was also negative.

Following the administration of sulfapyridine, the temperature fell rapidly, reaching normal within 24 hours, rising to 100 8°F but falling promptly again and remaining normal The patient felt much better, improved rapidly and was allowed up on the 14th day An x-ray (Fig 3) photograph taken the 17th day, showed clearing of most of the right upper lobe lesion, and no evidence of involvement of other lobes

Arrangements for discharge from the hospital were made on the 18th day, but on that day the patient suddenly experienced general malaise, dyspnea and knife like pain below the right costal margin. He had no chill The temperature rose to 102 4°F, the pulse to 120 and the respirations to 46 The blood pressure remained at 110/75 The white-cell count, which had fallen to 9900, rose to 33,600, with 96 per cent neutrophils Though examination of the chest revealed no definite signs of pneumonia, an x ray photograph showed a small shadow in the right lower lung field which had not been present the previous day (Fig 4) The sputum was mucopurulent and contained no blood but moderate numbers of Type 1 pneumococci The blood culture was sterile.

The following day the patient was somewhat worse and developed dullness, bronchovesicular breathing and rales over the right lower and middle lobes, but not over the upper lobe An x-ray photograph showed diffuse clouding of the right lower lung feld, which became more extensive after another 24 hours (Fig 5) Sulfapyridine was again started, after 13 gm had been given the temperature fell to 100°F and the patient looked and felt much better Sulfapyridine was continued for 9 days, during which time 43 gm was given, but the temperature did not fall below 100°F

Following discontinuance of sulfapyridine on the 27th day the temperature rose from 101° to 102 2°F, and 3 days later 250 cc of an exudative fluid containing neutrophils and Type 1 pneumococci was removed from the right pleural cavity Sulfapyridine was started a third time. The drug was given for 6 days, with a total dose of 34 gm Nevertheless, fever continued, and although several attempts at exploration failed to reveal fluid, it was felt that an empyema must be present. On the 45th day thick

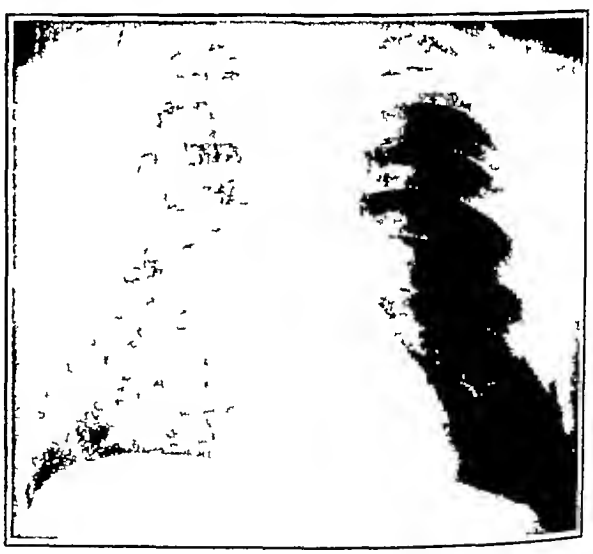

FIGURE 3 *X ray Photograph of Chest the Day before Patient Was to be Discharged*

pus containing Type 1 pneumococci was found, and the following day a rib resection was performed. Convalescence was uneventful, and the patient was discharged in good condition on the 79th day

DISCUSSION

Recurrence in a successfully treated bacteremic patient with Type 1 pneumococcal pneumonia brings up a number of interesting points Because the patient made a good clinical recovery,

according to generally accepted criteria, we feel that the term recurrence better describes the second attack than does "relapse Recurrences in lobar pneumonia have been reported by a number of authors, but the time interval is usually longer than the two week period noted in this case. In a study of 57 cases of recurrent pneumonia by Finland and Winkler,[7] the shortest interval observed between attacks was four weeks, and the average time between attacks by homologous pneumococcus types was twenty-eight months. Cecil[8] has observed relapses of lobar pneumonia within a few days of inadequate serum therapy, but he does not give details of these cases Recently Langdale-Smith[9] has reported 2 patients with pneumonia of unstated etiology who were said to have suffered relapses five and six days, respectively, after the termination of sulfapyridine therapy In 1 case spread occurred to the opposite lung six days after cessation of the drug in the other case, the nature of the relapse was not stated

That sulfapyridine can be used successfully in many instances without the synergistic employment of anti pneumococcus serum has been demonstrated by a number of workers[1-6] Whether it will be successful in all cases remains to be seen Finland and Dublin[10] suggest that combined therapy may be more efficacious than chemotherapy alone, and Agranat and his co-workers[3] have effectively treated patients with drug plus a pneumococcal vaccine Maclean, Rogers and Fleming[11] have shown that although mice actively immunized with a vaccine made from sulfapyridine insensible strains of pneumococci and non immunized mice treated with sulfapyridine do not survive infection with the same strain mice given both active immunization and chemotherapy survive even larger infecting doses than do the other two groups.

FIGURE 4 *X-ray Photograph of Chest on First Day of Second Attack*

In this case the strain of pneumococcus was manifestly sensitive to the action of sulfapyridine, but the defensive forces of the body were presumably not able to bring about the death of all the pneumococci present. We have no data that would help to decide whether the organisms remained in the lung the throat or elsewhere, nor can a new extrinsic infection be absolutely ruled out. Against the latter possibility is the fact that convalescence took place on a ward where there had been no other Type I patients, and where the patient himself had not been during his first attack. It was not feasible to study the ward personnel for possible carriers

FIGURE 5 *X-ray Photograph of Chest on Third Day of Second Attack*

Data are also lacking concerning the mechanism of recovery from the first attack of pneumonia, but it is of interest that no agglutinins could be demonstrated in the patient's serum after recovery from the second attack It is noteworthy also that empyema followed recovery from the second attack but that sulfapyridine was unable to sterilize the pleural cavity even when the exudate was relatively thin

It would be of interest to speculate whether a degree of local immunity existed in the right upper lobe at the beginning of the second attack Coggeshall and Robertson[12] have shown that dogs reinfected within a short time after recovery exhibit an increased ability to localize the pneumococcal infection and further work by Robertson[13] has shown this immunity to be much greater in the lobe originally infected than in other lobes In

our patient, it is impossible to be certain of the exact extent of the pneumonia in each attack Nevertheless, x-ray and physical examinations indicate that little if any of the same lung tissue was involved in both attacks

It will be of great interest and importance to observe whether, as data on sulfapyridine-treated patients accumulate, the incidence of recurrences of pneumonia by the homologous type pneumococcus is greater than that observed in serum-treated patients or patients who recover spontaneously

SUMMARY

A case of recurrence of Type 1 pneumococcal pneumonia two weeks after recovery following sulfapyridine therapy is reported The bearing of this relapse on the problem of chemotherapy of pneumonia is discussed

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THE ROLE OF PERSONALITY IN CERTAIN HYPERTENSIVE STATES*

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THE alert internist has long known that the role of emotions in the problem of hypertension is one requiring as much management in treatment as the condition of the blood vessels or kidney A number of medical articles acknowledge the task and attempt to define the hypertensive personality Psychiatric literature is replete with studies in personality among patients wth hypertensive and cardiac disease Many clinicians have noted that their true cardiac patients tend to minimize or disregard their symptoms, while the neurotic patient focuses with anxiety on every somatic sensation But the differentiation of the neurotic is not made on any such simple criterion, nor is the role of emotion always immediately obvious

Hypertension is, after all, a situation in a person The physician should be prepared to work with all the factors in his case, even if they are emotional or due to personality components which do not immediately show their relation to the medical syndrome being studied

The role of cardiac function in emotion is perhaps more easily understood In his 1922 monograph, Braun[1] offers the concept of cardiac psyche of which anxiety is the essential mark and the heart the specific sense organ of anxiety Whether we go this far with him or not, we all recognize cardiac overactivity as an integral part of any emotional state Eichenberger[2] observes that cardiac patients often show a definite increase in anxiety dreams with beginning decompensation We need not be specialists and go as far as Schwab,[3] who stresses unconscious emotional conflicts as a basis for pathologic changes in cardiac rate and rhythm, the emotional factors are usually perfectly evident, and a few pointed questions usually reveal their pertinence

Many aspects of cardiovascular function, aside from mere heart rate, have come to show their intrinsic relation to the personality disorders The common medical syndrome, neurocirculatory asthenia — sometimes described as vasomotor neuroses, functional cardiac disorders, effort syndrome, soldier's heart — very rarely shows any intrinsic cardiac damage, yet is often mistaken for cardiac disease Emotion has even been claimed as the primary etiology in organic heart disease and as responsible for certain sudden cardiac deaths[4]

When we turn to the subject of hypertension, the first difficulty encountered is in the definition of what constitutes high blood pressure. Bordley and Eichna[5] have shown that considerable variations in blood pressure occur in every individual,

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dependent on the manometer and cuff used, anatomical and hydrostatic effects, exercise, rest, posture and emotional excitement. They warn against utilizing life insurance statistical figures for the normal as a criterion in any given case.

There are early and extensive studies on the relation between emotional factors and blood pressure which have given, on the whole, contradictory results. While it is unlikely that we can draw any true correlations between the degree of emotion as felt by the patient and the degree of systolic blood pressure change,[6] rises of blood pressure under emotional situations are clinically frequent enough to be evident.[7] MacWilliam[8] discusses blood pressure rise during sleep and dreams and offers an answer to the common question "Why does cerebral hemorrhage frequently occur at night and in sleep?" There are numerous studies of blood pressure in neuroses and psychoses, in sleep and under hypnosis, showing unmistakable dependence of blood pressure on the affective state.

We know also how easily emotional states can be aroused in the hypertensive. Anxiety may develop and focus around a diagnosis of hypertension, leading to profound and disabling invalidism. There are those[9] who believe that hypertension is only a symptom of personality disorder and who point out[10] that the hypertensive's own special temperament makes him prone to vigorous emotion and inner tension, both of which have their effect in pushing the blood pressure higher. Lastly we have the extremists who would make emotion the primary basis for arteriolar changes, leading in chronic states to true irreversible sclerotic change.

We should do better to forget the term neurotic. We are tempted to speak of neurosis when our methods of examination are inadequate to reveal demonstrable organic pathologic changes. We ought to speak of a person in whom the cardiac or hypertensive component is either leading or incidental, present as a proved reversible or irreversible change or as a temporary physiological alteration. We must recognize that the frightened individual may be more seriously crippled in life than is the true hypertensive who may live for years in productive activity.

In the following discussion I propose to present samples of cases in some of which the primary disturbance will be seen to be one of personality maladjustment with resultant blood pressure changes. Our task will be to see whether the personality role ever appears as a convincing etiologic background for the development of essential hypertension and whether emotional factors ever modify the diagnostic formulation, the prognosis or the course of the disease. I wish also to show how unwise handling of cases can create profound invalidism and how personality factors must be considered in any therapeutic program. In some of the cases it will be clearly evident that, even in proved essential or arteriosclerotic hypertension, personality reaction assumes a dominant place and can be the productive wedge of attack upon the problem. It will be necessary to define the specific personality if there be such a thing, and the liabilities to be encountered.

TYPES OF CASES

Let us consider as our first group of patients those in whom the personality plays a dominant precipitating role or gives the clue as to the nature of the patient's complaint. In some, an acute emotional crisis in the life may lead to an abrupt and transitory elevation of blood pressure. In others, the essential personality has become anxious and insecure because of special attitudes developing around an elevation of blood pressure which is often fluctuating and is probably not a true idiopathic hypertensive condition. A third type of person goes through life fearing hypertension even though showing only mild or insignificant blood pressure rises. In a fourth type, long-continued anxiety or insecurity gives rise to a true essential hypertension which may be lasting in character. The fifth case shows the opposite of this state: a true hypertensive patient who is converted into a psychoneurotic individual because of superimposed fear and anxieties.

Our first case is that of a young man apparently normal as to blood pressure who showed an interesting emotional crisis accompanied by hypertensive change, which quickly settled down.

Case 1. A 23-year-old obese, unmarried man was admitted to the hospital for weight reduction on June 20, 1938, at which time he was found to be physically sound; the blood pressure was 110/82. At that time he spoke of worry over possible heart trouble and concern over accepting a job in New York City of which he was apprehensive. He came from an obese family. Kept in the hospital until September 2, he lost 40 pounds satisfactorily and was discharged to take up his new occupation in New York City. He returned September 29 in a state of emotional panic brought on by his increasing anxiety over New York life. He was obviously profoundly stirred, and had been drinking. Of special interest was the blood pressure finding of 180/110 during this situation of severe anxiety and tension. Six days later with restored security and having followed a regime of continuous baths, mild sedatives and discussion of his anxiety, he left the hospital feeling quite well with the blood pressure 130/70.

Our second patient had a serious personality state of chronic anxiety brought on by ill advised medical treatment at the age of thirteen. During

recent years his anxiety state had become frankly psychopathologic, with marked fear of cerebral hemorrhage and interesting fluctuations in blood pressure accompanying his emotional upheavals

CASE 2 A 35 year-old, married man entered the medical service because of hypertension and attacks of anxiety and panic during which he trembled violently, felt he was going to collapse and thought he would faint His mouth became dry, he had violent palpitation. The attacks were curiously relieved by action or moving about. These attacks, which began when he was 30, occurred chiefly when he was in theaters or in crowds Because he was convinced that he had serious cardiac disease and hypertension, he came for a thorough physical examination, at which time his blood pressure was found to be 160/95

He had every reason to be heart-conscious He had been a thin, nervous, delicate, imaginative child who became panicky if ever he was left alone. At 13, when he was panicky during a medical examination, a tachycardia and heart murmur were diagnosed as endocarditis and he was kept out of school for the next 4 years Thorough re-examination by another physician after 4 years resulted in his being told that his heart was normal, but in spite of his return to school he never regained confidence. Even in his dreams he would become anxious if he found himself running Because of his expectation of an early death, he gave up all idea of marriage and his work was sporadic and unsatisfactory At 22, on a trip to the West, he became frightened of the altitude and sought physical examination when his blood pressure for the first time was found elevated—systolic 170 He rushed home and was hospitalized, and after a week was told that the blood pressure was normal At 24, during an affair with the woman he subsequently married he became frightened and again sought help He was found by his physician to have a blood pressure of 130/76 He married the girl when she became pregnant but had no love for her, and they went to live with his father, who was suffering from hypertension A year later, when he was 25, he applied for work, but was turned down because his blood pressure was found to be 160/90 When he was 27, a physician gave him a clean bill of health so that he might apply for a job and found his blood pressure 134/76 At the age of 31 he was followed for a year, but his only abnormality was a hypertension of 160 188/96 Since 1934, at the age of 31, he had complained constantly of his attacks which were clearly anxiety attacks and associated with a number of factors, namely his father s death from cerebral hemorrhage, his own repeated marital infidelities, his financial dependence on his family and his protracted resentment of his mother, but his symptoms were particularly related to the sexual adventures, and ceased when he had given up his extramarital affairs

The patient was thin, asthenic and underweight. The heart was not enlarged and there was an inconstant systolic murmur, the kidney function was excellent. On the paternal side of his family, there had been many cardiovascular deaths He had a blustering, domineering hypertensive father, a rigid, proud, independent mother and an alcoholic, shiftless brother He himself shunned responsibility but did everything at top speed and in his own way He did little planning, had high self-esteem and was self-centered He had few friends and no hobbies He was dependent, easily influenced and suggestible

On admission to the psychiatric clinic, the patient had a blood pressure of 160/95 Within a few days, when his security had been re-established and the analysis of his symptoms began to reveal their true anxiety nature, the blood pressure dropped to 130/70, and one month later was 125/75

We had in this case a man whose blood pressure fluctuated over a wide range and whose symptoms sprang from anxiety, the basis for which had been laid during mistaken diagnosis and four years of adolescent invalidism With a thorough reorientation of his sexual standards, a new evaluation of his marriage and its worth, the determination to free himself of the family dependence and the complete reassurance that comes from a full program of activity and exercise in hospital, there came a release from anxiety and return of the blood pressure to a normal level

In both the preceding cases, we were dealing with actual blood pressure elevations In the second case the really disabling state was one of protracted anxiety, and the symptoms revolving around his conviction of high blood pressure. There is no evidence as yet that he is a true hypertensive Were it not for the family history we should seriously question the diagnosis of hypertension that had been so frequently given him He showed evidence of marked lability in his blood pressure swings, but thirteen years after the first discovery of an elevation, the blood pressure findings were normal

The third case is that of a woman whose disability sprang entirely from her personality, the blood pressure elevation was purely incidental

CASE 3 A 50-year-old, married woman entered the medical service March 23, 1938, complaining of high blood pressure, pains in the head, attacks of nausea, vomiting and fainting and burning on urination, of six months' duration Actually the heart examination was normal, there was only moderate thickening of the vessels and the blood pressure was 160/92 The patient was palpably apprehensive and frightened over her hypertension, and it was evident that her symptoms were out of all proportion, her 6 months' severe invalidism having very little relation to her mild hypertension.

She had consulted four physicians, becoming increasingly apprehensive after talking with each Her mother died from hypertension and two sisters had transient and easily controlled hypertensive symptoms She belonged to a club of women who regularly swapped symptoms. Her own physician had put her on guard against her illness by urging her to watch for symptoms and limit her activities, thereby creating an intolerable burden of responsibility for an apprehensive minded person She gave up her activities, never left the house, did none of her own housework, and spent most of her time in bed complaining She had been told of every blood pressure reading and warned especially about her diastolic level

She had never had a serious illness but had never been strong She tended to overdo everything and for years would get easily nauseated and vomit. She was a farmer's wife, childless, and married to a kindly, over sympathetic man who had also been frightened about

her condition. Her husband and adopted son had done all the housework and the patient had given up all church and neighborhood activities. A mental status examination showed her markedly apprehensive downcast and overly sensitive, but not psychotic.

The task of the psychiatrist was to relieve her of the burden of her fear, to urge her to give up looking for symptoms, to formulate exactly how much activity she could have and to get back into a wholesome routine based on what she was really able to do The same formulation had to be given the family physician. She was greatly reassured while in the hospital by being encouraged to feel that she could resume activities She left the hospital April 1 improved the blood pressure unchanged — 160/92 — but symptomatically at ease.

It was evident that we had a serious and profoundly disabling state of invalidism developing in a woman with only mild blood-pressure elevation and contributed to by the multiple circumstances of her environment

Our fourth case represents a common type of reaction often described in the literature in which a protracted state of anxiety is accompanied by a relatively slight but significant rise in blood pressure which remains elevated after the major personality factors have become clarified Thus we see an essential hypertension in the evolution and cannot help but be struck by the evident etiologic role played by the protracted anxiety and depressive state.

Case 4 A 43-year-old unmarried professor entered the psychiatric clinic September 13, 1936 in a state of anxiety and tension with some depressive features presenting a blood pressure of 168/100 complaining of hypertension and growing nervousness with preoccupation about himself and his sensitiveness, excessive perspiration poor concentration and restlessness, all of which had become marked since the previous April beginning with the completion of his Ph.D thesis and his attempt to pass his oral examinations.

Coupled with this immediate worry there also had been the strain of the 5-year illness and death of his father the care of two unmarried sisters, limited finances growing dissatisfaction with his teaching a lonely isolated life and frightening pain over the precordium. Twice he was turned down for insurance because his blood pressure during examination was found to be 200 systolic. He felt himself slowly giving way unable to face his daily tasks, becoming overly sensitive, easily embarrassed and imagining that people noted his insecurity More and more he remained secluded in his room, giving up all outlets. When his professor began to press him for his thesis his blood pressure was again found to be 200 systolic. During the following summer while vacationing and free of this burden he was examined and found to have a systolic reading of 130

His was a story of lifelong neurotic development. As a child he was a nail-biter feared the dark, had night mares, was shielded by his parents and was prevented from choosing his playmates. He early became bookish studious and solitary In his junior year he dropped out of college for 1 year because of mental weariness, poor concentration and discouragement As a scholarship boy at a private school he felt out of place and unable to participate in athletics. He had an extraordinary lack of sex information. Frequent sexual arousals, manipulation and emissions led to marked sexual preoccupations, conviction of loss of vitality and impairment of growth certainty that he was abnormal and unfit to marry and repugnance toward intercourse. His whole life came to center around this I felt ashamed. It has inhibited me has kept me from going ahead. I thought I shouldn't marry I wondered if it had affected me and kept me from being normal. I thought I might go off into insanity I feel I must know whether I am a fit person to marry " He attributed his chastity to his lifelong worry There was no evidence of homosexuality

In personality the patient was bookish solitary poorly socialized without hobbies a serious and prodigious worker self-deprecatory extremely self-conscious overly reactive to criticism and markedly hypersensitive almost to the point of paranoid delusions His paternal grandmother died in the early forties of cerebral hemorrhage his father died at 67 of nephritis. Direct examination brought out marked vasomotor lability with excessive perspiration cold, clammy hands and feet moderate thickening of the peripheral arteries an old mitral valve lesion and normal kidney function.

Almost at once upon entry he began to feel at ease and more confident. Within a week his blood pressure was 140/85 The problems of his life were investigated the situations were clarified that particularly made him tense the whole sex status was oriented. His depression quickly lifted his self-deprecation disappeared. A detailed personality study led to true evaluation of his assets and increased ease in socialization. His timidity easily gave way and he became more sociable and talkative with the group The tension was eased with hydrotherapy and full discussion of his early life and immediate circumstances. He left the hospital after 4 months cheerful optimistic and self-assured the blood pressure was 150/95

His status 2½ years later was one of complete well-being and comfort and allowed us to conclude that the course and development of the hypertension had been definitely ameliorated

In this patient we cannot ignore the years of increasing tension and insecurity preceding the first discovery of hypertension. Nor can we forget the striking correlation between the first elevation and the strain of accomplishing his doctorate thesis. The family history gave ample indication of a constitution prone to hypertension but the striking life circumstances seemed to play a specific precipitating role. Therapy in this case was directed entirely at the management of the person and the circumstances, and resulted in complete alleviation of all symptoms without specific medical therapy ever having been employed

Our fifth case is that of a woman who was perfectly well until the discovery of a hypertension, and in whom the disabling symptoms spring from a personality which had been profoundly altered by her years of fright and insecurity In her, the medical profession had contributed to the development of a disabling p
condition, and her individual
sy directly brought

medical mismanagement of her essential hypertension

CASE 5 A 36-year-old married housewife came to the diagnostic clinic complaining of high blood pressure, and saying that she had been under profound mental strain and fear, that she was terrorized by the sensation of throbbing in the fingers, buzzing in the ears, frequent headaches and transient numbness of the left side of her body She said she had seen too many doctors and been told too many things, and had never confided any of her mental quirks and worries The mildly elevated and fluctuating blood pressure could not have accounted for her symptoms

She was definitely of a hypertensive family, and had adequate reason for her fear in the fact that her mother died at 47 of cerebral hemorrhage, a maternal aunt at 55 of apoplexy, her father died suddenly at 50, and her paternal grandfather at 64 of hypertension Other members of the father's family were said to be hypertensive

The history of the onset of her complaints gave ample evidence of the role of fear and misinformation During her first pregnancy, which terminated August 24, 1929, she was told that she had hypertension (170 systolic) She was doing office work for a woman physician, a hypertensive who was quarrelsome and exacting She read a lot and picked out all the medical items for herself The delivery was difficult and she resolved to have no more children Sixteen months later, in December, 1930, she was delivered of her second child She changed physicians, believing the first had mismanaged her case, and got a young graduate who told her she had a heart murmur that might become a serious leakage and that to bear another child would be disastrous At about that time her father died and her mother died of cerebral hemorrhage Since then, she said, "I've been no good—just chronic aches and pains I was sure I was dying" Because of her husband's carelessness with contraceptives, she was delivered of a third child November, 1933, and a fourth in August, 1936 Shortly after this her blood pressure was found to be 170 but was easily reduced to 138

She feared and hated pregnancy, determined to have no more, resented intercourse, which had become painful—"I knew intercourse increased blood pressure, and was afraid, thinking I'd die during it of a stroke or hemorrhage." The resentment of her husband became mountainous She finally refused intercourse Her husband acquired syphilis extramaritally and was still undergoing treatment "I nearly lost my mind over his syphilis He told me he was an innocent victim but his specialist told me different. It is not the worst sin in the world, but I resent the fact that he won't admit he acquired it from a woman' Resentment is the chief reaction to her entire marriage—'It's been smouldering in me—I've resented marriage for ten years I'll be damned if I'll put up with it any more He has been callous, inconsiderate He won't take contraceptive precautions I will not become pregnant again We've always been antagonistic since we were married It's been bottled up in me so long and I resent it so much' She felt superior to her husband and his family They had never had any surplus money and had always had debt hanging over them There had been constant bickering between them for the past several years The house was small and crowded, the children were underfoot, she did all her own housework She smoked twenty-five cigarettes a day

Her whole life had been one of striving for a higher social stratum, resenting those who stood in the way Her father, to whom she was excessively devoted, was an alcoholic who ultimately deserted the family and divorced the mother Following the divorce, her one desire was to avenge her mother She was reared on a farm, was looked down upon by the neighbors for her father's behavior She worked her way through state training school, took a business course, won honors in school, had some mild attention from a university professor She sought her ideal of social advancement in a good marriage but was bitterly disappointed in the low quality of her husband's family, whom he never introduced until after she had married him

In spite of her suggestive symptoms, physical examination revealed a normal sized heart, a rough systolic murmur at the apex and fluctuating blood pressure—140/95, 160/90, 132/75—during three successive determinations The retinal and peripheral vessels were not sclerosed

At the beginning of her story to the psychiatrist, the blood pressure was 148/82, on repeated examination 136/80 At the end of her story it was 132/74 During her recital she said she was sure her blood pressure had gone up, actually it had dropped.

Our second major group of cases consists of individuals of known hypertension In them, the personality features play a less dominant role but still profoundly modify the onset, course and discomfort of the disease

One sometimes has the opportunity to observe essential hypertension and its development, and there are times when it is difficult to reject the suspicion that the person and mode of life are the primary etiologic factors The following cases of true hypertension show interesting and variable personality reactions and clearly indicate the extent to which the patients' own personalities contributed to their comfort or discomfort

CASE 6 A 35 year-old, married dentist complained of high blood pressure discovered 8 years previously when he applied for insurance, but giving no symptoms, in spite of an active life of practice, limited recreation and long arduous hours, until January, 1936, when with increased responsibility he developed rapid pulse, pounding heart, dizziness and headache He consulted a physician and found his blood pressure to be 225 systolic, but in January, 1937, at the time of admission he showed a normal heart, absence of arteriosclerosis, and a blood pressure of 146/100 He had a labile blood pressure, dependent upon moods and excitability and had an early hypertension precipitated by general strain, worry and poor habits Correction of his mode of life and reorganization of his plan of living resulted in complete easing of his symptoms throughout the 2 years that elapsed He wrote that his blood pressure was normal

Perhaps the most interesting patient of this series is the following man with a sustained arteriosclerotic hypertension in whom fluctuations of blood pressure and general discomfort were clearly dependent upon emotional factors and his state of general composure

CASE 7 The patient was a 43-year-old, married, successful businessman who in 1929, at the age of 34, showed for the first time a slight elevation of blood pressure to 152/98 He was of a hypertensive family, and his father died at 59

after 19 years of progressive cerebral arteriosclerosis and a terminal mental depression A paternal uncle was invalided from the age of 50 until his death at 58 of angina pectoris. His mother had suffered from Bright's disease for 4 years starting at the age of 45 His was a family also of high-strung individuals with a sister who came near to a nervous breakdown an older brother who since the World War had been irresponsible, alcoholic and nomadic. By the age of 40 our own patient's blood pressure had become permanently elevated ranging from 158/96 to 200/132. He himself recognized fluctuations with nervous strain and excitement and asked for help in achieving a more equable temperament

He was first seen by a psychiatrist in October 1936 at the age of 41 when his blood pressure was 198/132. He had been through a profoundly disturbing emotional experience in September when he had gone West to straighten out his brother's unhappy marital tangle. While there he suddenly began to wonder if he too could develop like his brother — *I wondered if I didn't have some of* those vagaries myself. I wondered how I appeared to my wife. It occurred to me that I was utterly weak at not sticking at anything He became panicky and profoundly wrought up he was unable to sleep one evening and called a local physician who gave him a sedative This act completely undermined his confidence as he felt he must be in a precarious condition if he needed to start using sedatives.

He had been aware of his hypertension for several years prior to this and a blood pressure of 152/98 was first discovered In 1929 during a mild upper respiratory infection By December 1930 while under profound strain in a brokerage house which subsequently collapsed after the suicide of the head of the firm he developed occasional headaches. By 1934 he was having slight chest discomfort following tennis. At this time the blood pressure was 146/92, the fundi showed slight arteriosclerosis, and a soft systolic murmur was heard at the apex the second aortic sound was loud and accentuated. During a routine examination in April 1935 the blood pressure was 148/100, the heart was normal in size, a loud systolic murmur was heard over the entire precordium and the second aortic sound had taken on a ringing quality There was moderate peripheral sclerosis By January 1936, he had lost his position and was complaining of some nervousness and a tendency to worry The blood pressure had started to increase (158/96) By April of that year he had found re-employment. Faced with high responsibility and his difficulty of making rapid decisions he was having panicky feelings and was restless and frightened His blood pressure was found to be 180/116, and he was advised to leave work each day at noon During the next 4 months the blood pressure continued at 180/102 114 but by July he was feeling better and the blood pressure was 166/94 In September he took the trip West, and when he returned from this disturbing emotional experience the blood pressure was found to be 198/132.

When first seen by me he spoke of being depressed all the time, morose, with poor appetite and bowel movements two or three times a morning He was worrying desperately about his future, was anxious and fearful about his health and was increasingly introspective, self-analytical and irritable. He spoke of being restless, and excited when details of his work went badly His sex drive had fallen off He was convinced that he was not doing justice to his work, although actually managing it very successfully He spoke of his tremendous ambition his desire to do the best job possible, his extreme overconscientiousness. He found himself avoiding people, not wanting to go out perspiring a great deal. He became intolerant of people, *irritated by his children* and distrustful of others, analyzing *the motives behind casual remarks.*

The story of his life gave ample evidence of the special type of temperament, which was developed and fixed at an early age. As a boy he was timid bit his fingernails suffered from nightmares had a quick-rousing temper and was passionately fond of athletics. At the age of 12 he had to be taken out of school for a month because he had become overly excited and sleepless during the athletic season. His father was a *strict*, stern hard-working man with rigid religious standards. The patient was never close to him was often resentful of him and in later life avoided him disliked having to speak to him and saw little of him. On the other hand, he was very intimate with his mother a gentle kindly person. As a boy he never got on well with his older brother who made life as a child unendurable for him In late years he had to help support this brother to whom he subsequently developed a marked sense of devotion and responsibility Always he had been overconscientious like his father and worried over trivial matters. During his courtship he was highly temperamental and would be in the depth of depression at any discouragement from his fiancée. The patient had rigid sex standards and took occasion to warn his 14-year-old brother against kissing He did well throughout college, but disappointed his father by dropping from eighth to fourteenth in a large graduating class. He had used alcohol in moderation. His marriage had been a happy one the sex adjustment had been adequate.

In temperament he could be summed up as excitable, easily upset, with a high temper tremendously ambitious overly conscientious, meticulous about details, orderly and punctual. Socially he was sensitive and his feelings were easily hurt. He tended to analyze the motives of others

It was evident that this man had been through a stirring emotional experience in which he had become panicky depressed insecure and anxious. Following his first long interview and the confession of an early experience the shame of which had been a serious burden to him for years he immediately felt more at ease. He readily agreed to a program of continuous baths, relaxation exercises adequate rest and reassurance about his depressed condition He was urged to increase his recreation and decided to take up two old hobbies namely music and nature study to serve as a balance to the strain of his work. He determined on reasonable hours of work, as speedy a settling of all issues as possible and a modification of his athletic interests, which were always highly exciting to him

Ten days later his headaches had largely disappeared and he was in much better spirits. His blood pressure had fallen to 172/110 For the next 7 months he came to the clinic for a weekly interview during which time he began to understand his relation to his brother and to modify his own responsibility toward him. His sex status was investigated further and he came to see how certain arousals led to unprofitable stimulation and how to avoid them. He adopted a deliberate attitude of being more casual about appointments routine and his expectations of others A deep-seated resentment of a neighbor which had played a large role in keeping him stirred up was analyzed in its relation to his brother of whom this man invariably reminded him. He came to see himself as the exact opposite of his brother and his fears on this score were gradually allayed, Two months later by January 1937 his blood pressure had fallen to 148/96 and on one occasion in March had dropped to 138/90. He came to

understand the role of emotional situations in raising his blood pressure. He gave up some of his duties in the church which had constituted a real strain for him He was finally made permanent head of the concern, which he reorganized, and felt that his future had become secure. Treatment was terminated in April because the patient felt he had secured a sufficient understanding of himself At that time his blood pressure was 160/100 At the last examination in January, 1939, he stated he had felt well for 13 months and had not been to a physician His blood pressure was 186/120, the fundi showed definite sclerotic changes and the peripheral vessels moderate thickening

In our final case we deal with another interesting variety of reaction, namely the hypertensive who develops a psychotic or semi-psychotic condition in association with diffuse cerebral vascular changes In her, it is of interest that the symptoms for which she sought help were not those deriving from the hypertension but sprang from the gradually emerging psychopathologic personality state

CASE 8 A 49 year-old, married woman with known hypertensive cardiovascular disease and generalized arteriosclerosis entered the medical service because of persistent hypertension ranging from 198 210/114-120 This had been present for 18 months, during which she had one attack of severe substernal discomfort not relieved by nitroglycerin and a mild cerebrovascular accident which cleared entirely after 3 weeks She linked her discomforts, however, not to her hypertension but to profound dissatisfaction with her marriage and the fact that she did not love her husband. She felt that he had mistreated her and cheated her of the best of life, that he had had an affair with another woman and that he was subservient to the wishes of his family to the exclusion of giving her adequate attention. Hers had been a life of constant jealousy, long standing smoldering resentment and slowly emerging suspicion

She was a woman whose interests had been limited to clothes, home and her child

Under test with Sodium Amytal narcosis, the blood pressure remained constantly elevated During a period of 10 days in the hospital with ventilation of her resentments, bed rest, and the giving of luminal and potassium thiocyanate, the blood pressure dropped to 160/110 Following the first visit of her husband it rose to 215/130, but at the time of discharge 15 days later it had fallen to 150/100

It is apparent that in this known hypertensive patient there were some fluctuations in blood pressure dependent on emotional states and the blossoming forth of a paranoid delusional suspicious condition

Examination of this entire series of cases reveals interesting steps in the progression of the hypertensive state In all of them we are dealing with elevated blood pressure, but the significance of that finding requires individual evaluation and must be formulated differently for each individual Is it possible to single out stages which may represent the typical developments in any one individual? We see in Case 2 a condition where the hypertension is labile and fluctuating, easily returning to normal, not yet fixed at any definite level In Case 4 we see how long-continued emotional states contribute to the rise of the blood pressure level, which then remains permanently slightly elevated and no longer shows a reversible character or a return to a completely normal base line In Case 8 we watch the slow, gradual elevation of a true arteriosclerotic hypertension, but where variability in blood pressure reading is still dependent upon the emotional factor We do not mean to minimize in any of these cases the evident hereditary component nor the fact that most of these individuals spring from families heavily loaded with hypertension Nonetheless, the factors which set off their own disease are often those stemming from their emotional difficulties or personality maladjustments There seems little question that in all but the terminal stages of hypertension the blood pressure is still modifiable by attention to the personality component. But more than that, we see that the evaluation and stress placed upon any finding of blood pressure elevation can be grossly misleading unless the emotional factors are accurately weighed The serious, crippling damage that can be done to the person by neglect of these factors clearly speaks for itself

The material of these cases permits certain generalizations Case 4 shows us the evolution of an essential hypertension and points to the etiologic role of prolonged emotional strain Case 2 shows the care that must be used in diagnosis Case 7 shows how the course of the disease can be modified, and Case 5 how the prognosis can be mistaken Case 3 shows how unnecessary invalidism can be produced by unwise management. In all the cases it should be clear that therapy of the emotional state is productive, and in some the only constructive approach to the problem

PERSONALITY

Is it possible to define a specific personality—or personality pattern—for the hypertensive individual? Ayman[11] has made an interesting personality analysis of 182 hypertensive patients and concludes that we can speak of a distinct personality type characterized by increased psychomotor activity, by dynamic, hyperactive drives, by large, steady output of energy, quick temper and hypersensitiveness He stresses the fact that this personality has been present throughout life and is shown to be consistent long before the hypertension itself develops In addition, these are people who are easily embarrassed, unusually shy, blush easily and worry over trivial details

Other reviewers have stressed the high strung,

nervous, irritable, ill-balanced types who are serious, conscientious, infrequent at play O'Hare[12] points out the vasomotor instability in the presence of cold, sweaty cyanotic hands blushing and migraine

A study of the personality make up of our patients reveals unmistakable evidence of lifelong instability and emotional lability expressed in easy depression and anxiety In addition to the usual traits mentioned, we would include perfectionism ambition and overattention to bodily symptoms These are individuals who work at top speed, have a driving need to succeed who show tendencies toward jealousy and suspicion The outstanding emotional pattern appears to be one of resentment sometimes coupled with a frank desire for revenge This aggressive component, particularly when the resentment is smoldering and unexpressed, would seem to play a significant role in creating periods of long-continued stress and wear upon the autonomic system and the sustaining of a protracted high level of blood pressure *Hill*[13] describes from the psychoanalytic standpoint an interesting case where the reliving of a highly charged resentment experience of childhood appeared to bring about a reversal of blood pressure

It should be borne in mind that our description of personality represents a study of a selected group of hypertensives called to our attention because the emotional factor played an obvious role They represent samples of psychoneurotic individuals who throughout the life span give evidence of their particular temperamental liabilities The affective component in this group of cases stands out prominently and is in contrast to Ayman's attempt to differentiate the true neurotic and the affectively unstable groups. Such a differentiation is difficult to make. This limited series of cases is obviously inadequate for generalization about a specific hypertensive personality There are hypertensive individuals who tend to ignore their symptoms or who even totally disregard them They must constitute a totally different personality pattern from our present series of patients All hypertensives are not necessarily alike The task of the physician should be an evaluation of the special temperament with which he is dealing with full recognition of the liabilities inherent in the types described above. I have selected this group of cases because in them therapy must include attention to the personality make up Such individuals are especially sensitive to innuendos about their cardiovascular status They are easily frightened, and cling to every implication or facial expression of the physician Many of them have been made sensitive because of deaths or comparable illness in close relatives or friends Some are reacting emotionally to one of many factors in their total environment and are not primarily concerned with the hypertension itself Nonetheless, these factors contribute a great deal to their total symptomatology

The physician dealing with such individuals must be aware of the fluctuations that can occur even in normal individuals He must be particularly alert as to the special temperament of the patients, and should take the time to acquaint himself with their general affective make-up the special fears, anxieties and insecurities, and the situations of their lives productive of states of insecurity He must exert restraint in talking about the blood pressure of his patient It is unwise to give such patients the actual blood pressure figures There is no need to warn them against stroke or cardiac enlargement or to mention unimportant physiologic abnormalities They are already prone to restrict their own lives and should be told definitely the limit of activity they may enjoy They should be discouraged from exchanging accounts of symptoms with others Parents and relatives must be cautioned not to overevaluate the dangers. These are individuals upon whom every newspaper article, every campaign against disease falls as on fertile soil Since the neurotic type far outnumbers that of the hypertensive individuals of the world we need to exert caution along with our zeal to protect the accidental patient for whom awareness is essential

Consider, for example, the damage done in Case 5 by the peremptory warning by the young physician that another pregnancy would be disastrous The profound aversion to intercourse was the result and the husband's acquisition of syphilis the outcome Consider the years of disabling anxiety in Case 2 following the premature and incorrect diagnosis of endocarditis and then see how the adult personality molded itself around his insecurity

Psychiatric therapy for some of these cases results in a total orientation in their expectations of life and their evaluation of themselves, freedom from anxiety and the opening up of productive and comfortable years of living Therapy begins with the recognition of the particular temperament and its liabilities. The illness should be formulated in as simple and non-terrifying a manner as possible The neurotic has to be shown how his symptoms derive legitimately from his anxieties and concern The confidence of such a person must be restored by careful examination and honest statement of the findings Such individuals need training in the balancing of their work, recreation relaxation and play Hydrotherapy is a useful simple method for reducing

tension No program will be thoroughly affective until the patient is brought to see the origin and genesis of his own apprehensions, so that a simple scrutiny of the entire life record is often necessary before the patient can spontaneously recognize the correlation between symptoms and specific situations Such a program is within the easy scope of every practicing physician and requires no special significant training The physician who is alert to these factors will have a valuable therapeutic tool which will often bring more success in alleviating symptoms than is obtainable from specfic medical therapy There is much that remains to be known about hypertension Psychotherapy is a positive mode of attack, often the only really effective one available, attention to which can spell years of comfort and security, and neglect of which may lead to profoundly disabling and unnecessary invalidism

CONCLUSIONS

The hypertensive personality permits of the inclusion of various reaction types We deal in some with a lifelong unstable make-up where the personality itself becomes of primary importance in the etiology, diagnosis, prognosis, course and therapy of the hypertensive state Protracted resentment may be a specific *leit motif* running through the anxiety and insecurity of the emotional pattern Failure to recognize personality component may lead to serious complications of invalidism or elevated blood pressure Willingness to deal with the personality features may offer the only, or the most effective, therapeutic tool

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THE NEED FOR CO-OPERATION BETWEEN GENITOURINARY AND ORTHOPEDIC SURGEONS*

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RECENT experiences have impressed on me the intimate relation that may exist between the problems of the genitourinary surgeon and those of the orthopedist This relation may manifest itself in the natural life history of disease or as a complication of treatment Perplexing problems in diagnosis frequently demand the closest cooperation between these groups, as signs and symptoms in one system may simulate disease in the field of the other In the proper management of many bone and joint conditions, such as in spinal injury, chronic arthritis, intractable low-back pain and diseases demanding prolonged immobilization, consultation with the urologist is frequently essential The indefinite symptoms and meager clinical signs of early peri-renal suppuration may readily be confused with an obscure orthopedic lesion It is not uncommon to have x-ray study reveal the presence of a urinary calculus when the clinical picture has suggested bone and joint disease The predilection of cancer of the genitourinary tract for skeletal metastasis is also of important significance

The bones of the lumbar spine and pelvis are the most frequent sites of the osseous metastases in genitourinary malignant disease As a result of this habit of dissemination, the presence of a cancerous process in the genitourinary system may be revealed by signs and symptoms which direct the attention of the medical attendant, as well as the patient, to the site of the metastasis rather than to the seat of the primary malignant growth In such cases orthopedic consultation may be requested because of symptoms referable to the bones and joints, such as backache and "sciatica," or because of a pathologic fracture in an area of a metastatic deposit An obscure bone tumor, the nature of which may constitute an extremely difficult problem in diagnosis, may have its origin in a malignant tumor of the kidney or of the prostate

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Tumors of the renal cortex spread by way of the venous circulation to the liver, lungs and long bones, as distinguished from the papillary neoplasms of the renal pelvis, which have no distant metastases but extend along the ureter and may involve the bladder in proximity to the ureteral orifice. Osseous metastases from cortical tumors occur in a high percentage of cases, and in many of them attention may not be focused on the kidney because of the absence of blood in the urine, flank pain or a palpable mass in the renal region. Hematuria, the commonest sign of renal tumor, may be absent even in the presence of extensive metastatic disease. Tumor of the kidney must be excluded as the primary nidus of bone disease by careful urological investigation in the presence of pathologic fracture and in all cases of bone tumor in which a diagnosis cannot be established. The determination of the type and the origin of a bone tumor may constitute a baffling problem in diagnosis. Is it a primary growth, or a secondary deposit from an unrecognized and hidden neoplasm in a kidney? Such problems may confuse the urological consultant as well as the bone and joint surgeon. Study of the urinary tract may be entirely negative. Pyelographic studies by the retrograde and the intravenous methods may be inconclusive. In such cases a distortion of the renal outline may lead to a presumptive diagnosis. Obviously many of these patients are first seen by the orthopedist instead of by the genitourinary surgeon. At the Pondville Hospital (Massachusetts Department of Public Health) a number of cases illustrative of this group have been observed. The bones most frequently involved are the ribs, spine, clavicles and the upper portions of the femur. The importance of being alert to the urological aspect of bone tumors and of pathologic fractures is therefore evident.

Cancer of the prostate gland has a high incidence of bone metastasis. The secondary deposits commonly localize in the bones of the pelvis, sacrum and lumbar spine, although other bones are frequently involved. The frequency of osseous metastasis from malignancy of the prostate varies from 30 to 70 per cent in published reports. In a series of 81 cases of carcinoma of the prostate with metastasis reviewed by Graves and Militzer[1] 85 per cent showed x-ray evidence of involvement in the pelvis and sacrum and 59 per cent in the lumbar spine. In view of this predilection, symptoms consistent with "sciatica," lumbago and arthritis are commonly observed. Symptoms due to the metastatic disease may be outstanding and complaints referrible to the urinary tract either entirely absent or so mild that no significance is attached to them. As a result of back, hip or leg pain, the patient may be referred to the orthopedic surgeon. The value of routine digital examination of the rectum in this group cannot be overemphasized, as the failure to carry out this simple but essential diagnostic procedure may delay recognition of the clinical picture and postpone the institution of proper therapy. The man over forty-five years of age who seeks the advice of his physician because of low-back and leg pain with or without bladder difficulty, should always be considered a potential victim of prostatic malignancy until it has been excluded by painstaking evaluation of the gland on rectal examination. X-ray study of the lumbar spine and the pelvis may confirm the diagnosis.

In view of the established pathway of dissemination of carcinoma of the prostate by way of the perineural lymphatics to the bones of the spine and the pelvis, pain would obviously be an outstanding symptom even in the absence of positive x-ray findings. While it has long been recognized that metastasis of cancer of the prostate may cause pain before any confirmatory x-ray evidence can be obtained, Graves, Warren and Harris[2] adequately explain it as follows: "If the tumor is advancing along perineural lymphatics, then developing in the lymphatic plexus closely in contact with the periosteum and cortical bone as our sections demonstrate, it is apparent that there will be a period when there is a considerable amount of pain from periosteal involvement without any definite disturbance of the bone itself." Just as pain is an early symptom in primary carcinoma of the prostate, so it may be an early symptom in its metastasis. The status of the prostate on rectal examination may at times be disconcerting. The small, apparently localized growth is prone to disseminate in the early stages of this disease, while the large, locally advanced tumor mass may remain confined until the late stages of the process. Pathologic fracture, especially in the upper portion of the femur, as a result of bone destruction from prostatic malignancy is not an unusual occurrence.

The incidence of metastatic deposits in bone from bladder tumors is much less than that of those from the prostate. The pathways of dissemination likewise differ. Spread takes place in tumor of the bladder by way of the blood stream and in most cases occurs in the late stages of the disease.

It should be noted that Paget's disease of the bone frequently simulates metastatic malignancy. X-ray interpretation may be extremely difficult. Roentgen studies of the skull and the tibia may confirm the presence of Paget's disease.

cross-section survey of this problem among the orthopedic industrial surgeons of the country, reported appalling disclosures concerning the diversified procedures of managing this complication An exceedingly small number reported any set policy of neurourologic evaluation

Various methods of procedure have been carried out The establishment of automatic overflow, a regime of intermittent catheterization, the use of the indwelling catheter, suprapubic drainage and a program of tidal drainage have all been advocated The hazards of sepsis which attend a program of catheterization cannot be stressed too strongly, since the mortality as well as the morbidity from this source is extremely high Munger[10] has referred to the catheter as the "grand executioner" The policy of automatic bladder establishment has many ardent exponents In the experience of most urologists, however, the ideal vesical automaticity seldom occurs, as in most cases merely an overflow bladder develops Obstructive changes in the upper urinary tract are inevitable, and the introduction of sepsis is almost unavoidable Many urologists advocate suprapubic drainage They believe that the integrity of the kidneys is best preserved and urosepsis best controlled by this method This group advocate immediate suprapubic cystotomy if infection is present Munro[11] reports that without tidal drainage, regardless of the type of urinary tract therapy, genitourinary infection was evidenced in over 72 per cent of his patients with spinal cord injuries, and that with tidal drainage infection occurred in only 14 per cent The efficacy of this attack on urinary tract complications in spinal injuries cannot be questioned, but it must be employed with expert supervision It must vary with the type of dysfunction, and its proper use is dependent on a knowledge of the normal bladder physiology The indiscriminate use of a urethral catheter in spinal injury cannot be condemned too strongly, as infection is certain if this policy is adopted If tidal-drainage therapy cannot be instituted, suprapubic methods of drainage are warranted It cannot be denied, therefore, that in order to obtain the optimum results in this group of injuries a proper neurourologic evaluation is imperative

The frequency of injury to the bladder and the urethra associated with fracture of the pelvis demands the increased attention of the urologist The mortality among those in whom early diagnosis is not made is extremely high, and can be prevented only by prompt recognition and immediate surgical drainage When rupture of the bladder occurs in association with fracture of the pelvis, the site of the tear is usually on the bladder floor and is extraperitoneal The pubic bone is the cause in most cases Diagnosis may be very difficult as symptoms are less pronounced because of the absence of peritonitis Signs of urinary extravasation may appear relatively late Blood in the urine, obtained either by voiding or by catheterization, is almost universal in bladder and in urethral ruptures, while retention of urine is the next most common encountered manifestation In rupture of the urethra, the catheter may encounter resistance at the point of injury or its passage into the bladder may be unsuccessful When the rupture is associated with fracture of the pelvis it is generally located in the membranous urethra

Diagnosis of a ruptured bladder may be confirmed by the demonstration of the tear on cystoscopic examination This method should be employed, however, only when provision for immediate surgical drainage, if necessary, has been made Cystography is a procedure of worth as it combines the so-called "catheterizing and measuring test" with x-ray delineation of the extravasation The traumatic strictures which commonly follow urethral injury are a source of considerable economic loss Regular dilatation must be carried out over indefinite periods

As the victims of fractured pelvis are always admitted to the orthopedic or general surgical wards, it behooves those who care for these patients to be alert to the possibility of bladder or urethral injuries

Disturbances of vesical function may frequently occur following bodily injury independent of direct trauma to the organs of the genitourinary system or to their innervation This is especially true when the extent and the type of injury require recumbency Men in the age of prostatism are particularly susceptible to these complications A typical case is that of a man over fifty years of age who with a past history of mild bladder difficulty develops complete urinary retention following bed confinement In many cases the derangement of function is temporary, but frequently surgical relief of the offending prostatic obstruction is imperative The mechanism of the precipitated urinary retention is uncertain There is no doubt, however, that in most cases a partial prostatic obstruction pre-exists, and that the reaction of the nervous system to trauma and the general let-down in the body mechanisms, in addition to the enforced position of recumbency, combine to effect the urinary retention A transient disturbance of the reflex arc resulting in loss of bladder function and diminished activity of its musculature must be considered as an etiologic factor in this group of cases The proper management of these patients demands the co-operation of the urologist.

SUMMARY

The need of close co-operation between the genitourinary surgeon and the orthopedist is emphasized

Metastatic deposits in bone from malignant disease of the prostate gland and kidney may frequently simulate primary disease in bone and may be manifested by back and leg pain pathologic fracture and obscure osseous growths

A definite etiologic relation may exist between low back pain and inflammatory changes in the prostate gland

Patients who undergo treatment for prolonged periods, immobilized and in recumbency, are susceptible to the formation of urinary calculi and urosepsis

The high incidence of neurogenic dysfunction of the bladder following spinal injuries demands a careful neurourological evaluation of such cases

The frequency of vesical and urethral trauma associated with fracture of the pelvis should not be overlooked

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NEW HAMPSHIRE MEDICAL SOCIETY

PROCEEDINGS OF THE *ONE HUNDRED AND FORTY EIGHTH ANNUAL MEETING*

June 8 and 9, 1939

THURSDAY MORNING JUNE 8

THE members convened in the Hotel Carpenter, Manchester, at nine-thirty o'clock.

The first part of the morning was devoted to the following round-table conferences:

MEDICINE. Use and Abuse of the Pituitary Sex Hormones. Leader: Loren F. Richards, Nashua.
SURGERY. Common Fractures. Leader: Daniel J. Sullivan, Manchester.
PEDIATRICS. Pulmonary Infections in Childhood. Leader: MacLean J. Gill, Concord.
OBSTETRICS. Management of Abnormal Presentations. Leader: Norris H. Robertson, Keene.

During the second half of the morning the following round table conferences were held:

MEDICINE. Backache. Leader: Jeremiah J. Morin, Rochester.
SURGERY. Hernia. Leader: James B. Woodman, Franklin.
EYE. Abnormal Position of the Head Due to Ocular Disturbances. Leader: Alfred Bielschowsky, Hanover.
BIRTH CONTROL. Indications for and Technics of Contraception. Leader: Eric M. Matsner, New York City.

THURSDAY AFTERNOON JUNE 8

The Thursday afternoon session convened at two o'clock, with President Coburn presiding.

PRESIDENT COBURN: In opening this meeting I have the privilege of using a gavel which has been lost for years. I am going to ask Dr. Smith to tell us a little bit about the gavel because it is quite interesting.

DR. HENRY O. SMITH: The most eminent physician who ever had the privilege of presiding in this state was Dr. Josiah Bartlett, of Kingston. Dr. Bartlett was the first governor of New Hampshire. He was a member of the Conunental Congress and a signer of the Declaration of Independence. But Dr. Bartlett's chief claim to eminence is that he founded and was the first president of the New Hampshire Medical Society.

Tradition says, and I am sure it is a fact, that when Dr. Bartlett returned from Philadelphia on one of his trips, and all his trips were made on horseback, he brought with him to his home in Kingston two little bushes, which he set out on his lawn. One of them was a black walnut tree.

It happened that a little over half a century ago a president of this society, whose name I read here as Dr. John Wheeler, of Pittsfield, thought the Society ought to possess something which had some relation to Dr. Josiah Bartlett. So in 1887, the year in which Dr. Wheeler was president of our society, he caused to be made, from that black

walnut tree that Josiah Bartlett had brought from Philadelphia, a gavel, which he had suitably inscribed "Presented to the New Hampshire Medical Society, June, 1887, by John Wheeler, M D, Pittsfield, New Hampshire"

As your president has said, this block and gavel were lost for many years, but your secretary was encouraged to make a search for them, and during this past year he found them I now show you the block and the gavel that are the medals of two men, first, of Josiah Bartlett, and second, of John Wheeler

The latter part of the afternoon was devoted to a "Symposium on Neurology,' with the following titles and speakers

Treatment of Epilepsy and Migraine. William G Lennox, Boston

Neurosyphilis and Its Treatment. H. Houston Merritt, Boston

Treatment of Paralysis Agitans and Athetosis Tracy J Putnam, Boston

The symposium was followed by an address, "Proctologic Problems of the General Practitioner and the Surgeon," by Dr Louis A Buie, of Rochester, Minnesota

Friday Morning, June 9

The first period in the morning, beginning at nine-thirty o'clock, was devoted to the following round table conferences

Medicine Home Deliveries in Rural Sections Leader, Forrest B Argue, Pittsfield

Surgery Methods of Urography Leaders, John P Bowler and Leslie K Sycamore, Hanover

Anesthesia Some Misadventures of Anesthesiology Leader, A Frederick Erdmann, Lisbon

Nose and Throat Diseases of the Nasopharynx. Leader, Adolphe J Provost, Manchester

The general session convened at eleven o'clock

President Coburn I have a very unusual pleasure this morning, something a little out of the ordinary for this gathering I am going to ask Dr Smith, of Hudson, to introduce one of our oldest members, perhaps the oldest doctor belonging to this society

Dr Smith When I was a very young man, I began the practice of medicine in my native town of Hudson In the neighboring town of Londonderry there was a doctor by the name of Frank Perkins, who had been practicing there for a number of years Strange as it may seem to you, because I have heard some of you say that in the old days there used to be jealousy among physicians, Dr Perkins and I were always the best of friends

Dr Perkins was in the town of Londonderry for a number of years and then removed to a larger place, Derry, and he is now spending his last years in Manchester

In the history of our society, I do not know whether we have ever before had a member who attained sixty years of membership, but certainly not within my recollection Mary Danforth, our first woman member, was a member of fifty-nine years' standing at the time of her death Just at present we have another member, Herbert Hutchinson, of Milford, who has been a member for fifty-seven years

However, we have with us today a man who joined this society sixty years ago, Frank Byron Perkins He was born in 1856 and was graduated from the Dartmouth Medical School in 1877, before most of you were born I only wish it were possible for him to say a few words to you, but he has a throat affliction and cannot talk out loud He is deaf and does not hear a word I say, but I am going to have him stand up so that you may all see him [Dr Perkins then stood and received the acclaim of the audience]

I want to say just one word more The doctor has had this medal [referring to the fifty-year medal] for ten years—I have had mine for only one year which makes me feel like a boy

President Coburn It is now my privilege to introduce the visiting delegates from the New England states First, George Pratt, of Farmington, Maine

Dr George Pratt Gentlemen, I am pleased to bring you the greetings and best wishes of the Maine Medical Association I have enjoyed your hospitality very much and have attended the various meetings, which were most interesting and instructive

I was particularly pleased in the action which I understand was taken yesterday by the House of Delegates with regard to the Wagner Act I hope your resolutions were emphatic, and trust we shall take some similar action at our meeting on June 25, 26 and 27

Thank you very much for this opportunity to say a few words

President Coburn The delegate from Vermont is Wayne Griffith, of Chester

Dr Wayne Griffith I bring you the greetings from the Vermont State Medical Society I have spent a profitable and enjoyable two days here with you

PRESIDENT COBURN We have two delegates from Massachusetts with us, Edward A Adams and Thomas R Donovan, both of Fitchburg

DR. EDWARD A ADAMS We bring you the greet ings from Massachusetts and coogratulate you on your excellent meeting

DR. THOMAS R DONOVAN As a delegate from Massachusetts, I bring to the members of your society the best wishes of the Massachusetts Med ical Society I have had a most enjoyable time and am very happy to be here.

PRESIDENT COBURN The delegate from Rhode Island is Philip Batchelder of Providence May we have a few words from Dr Batchelder at this time?

DR. PHILIP BATCHELDER I bring you greetings from Rhode Island I arrived in New Hampshire this morniog and am having a fine time

PRESIDENT COBURN Is Dr Orland Smith of Pawtucket, present? [There was no response]

Our delegates from Connecticut are Thacher W Worthen, of Hartford, aod Paul R Felt, of Mid dletown

I know Dr Felt is here. Will you say a few words to us, Dr Felt?

DR. PAUL R FELT Again I bring you the greet ings the very best of friendly greetings, from the Connecticut State Medical Society As I said last year I have had a wooderful time.

There is just one little thought that I would like to leave with you good men, which is perhaps prompted by sentimental reasons I should like to commend you on the smallness of your meeting I hope you will not misconstrue this remark The smallness is a matter of oecessity because of the lack of numbers and of population

In a relatively small meeting there certainly is a friendliness and neighborliness and a social get together afterward that you never get in a large meeting You all know one another to a large ex tent, and you all come to the meeting feeling that you will see your next door neighbor Certainly it is a grand and glorious feeling as compared to that at the much larger meeting where you band up in individual groups and go home and think "Well I have been to just another meeting" You who come to these small meetings go home and say Well we have had another family reunion and oext year we are going to have another" I am very glad of that

There followed an address on 'Medical Problems of the Day," by Dr Rock Sleyster president of the American Medical Association

FRIDAY AFTERNOON JUNE 9

The Friday afterooon session convened at two-thirty o clock with President Coburn presidiog

PRESIDENT COBURN We shall hear the report of the Trustees to be given by Dr Smith, of Hudson

FINANCIAL REPORT

FOR THE YEAR ENDING MAY 1 1939

Receipts	
Interest on various bank deposits	$480.92
Expenditures	
Prize awarded to Barbara Beattie, M.D	50.00
Increase in funds other than the Benevolence Fund	$430.92

GENERAL FUND

Deposit New Hampshire Savings Bank	$5,504.36
Portsmouth Trust and Guarantee Com pany	3,327 12
Nashua Trust Company	1,600 80

BARTLETT FUND

Deposit Portsmouth Savings Bank	$6,252.35	
Permanent Fund	352.11	
Accrued income available for general use		5,900.24
Total available for general use, May 1 1939		$16,332.52

PRAY FUND

Deposit Strafford Savings Bank [$1000 of this is a permanent fund, the in come to be expended only for prize essays]	$1,389.88

BURNHAM FUND

Deposit New Hampshire Savings Bank [$1140 of this is a permanent fund, the income to be expended only for prize essays]	$2,085 23

BENEVOLENCE FUND

Deposit New Hampshire Savings Bank [The Merrimack River Savings Bank, now in liquidation, is expected to pay a small final dividend this year]	$2 058.56

A prize of fifty dollars was awarded to Dr Barbara Beattie of Littleton for an essay entitled "Undulant Fever Its obscure menace and specific therapy" It is expected that prizes will be offered in 1939–1940 and notice will be sent to the members of the Society in due time.

The accounts of the Treasurer have been examined and found to be correctly cast and properly vouched.

Last year at the meeting of this society it was voted that Dr Alpha H. Harriman of Laconia, be made "trustee emeritus"—the first time that such an honor has been confirmed. This action was based on the quality of service given this society by Dr Harriman over a period of four teen years, which we believe to be the longest term that any trustee has yet served.

Today, barely a year later, we have the sad duty to report that Dr Harriman's death on May 29, 1939, removes his name thus soon from the list of trustees We can but repeat what was said a year ago 'His colleagues on the Board wish to express their appreciation of his great ability, excellent judgment and spirit of co-operation which has ever been manifested throughout this service', and to this we add our own feeling of personal loss at his death Throughout his active life, Dr Harriman's services were freely and generously given to this society as one of its members and as an official in varying capacities Similarly his life was continuously and effectively given to the benefit of his patients and fellow citizens Because of his personal character and qualities he was loved by everyone who had the opportunity of knowing him The loss to the trustees, which they can only formally recognize here, is also that of the New Hampshire Medical Society

HENRY O SMITH,
FREDERIC P LORD,
SAMUEL T LADD

The program for the latter part of the afternoon was as follows

The Development of Socialized Pharmacy in the United States George A Moulton, Peterborough.

Clinical Phases of General Surgery W Wayne Babcock, Philadelphia

Control of Syphilis Raymond A Vonderlehr, Washington, District of Columbia, assistant surgeon general, United States Public Health Service.

FRIDAY EVENING, JUNE 9

The banquet was held at the Hotel Carpenter at six-thirty o'clock with Dr Ezra A Jones, of Manchester, as anniversary chairman The guest speakers were as follows Dr Clarence O Cobburn, president, Hon Charles W Tobey, Dr Rock Sleyster, president, American Medical Association The president-elect, Dr James B Woodman, of Franklin, was introduced

REPORT ON MEDICAL PROGRESS

PHARMACOLOGY

G PHILIP GRABFIELD, M D *

BOSTON

SINCE this is the first review of pharmacology to appear in this series, it might be well to consider carefully just what it is that we are reviewing Pharmacology deals with the action of chemical substances on living cells, and as a science is as non-utilitarian as any scientific discipline However, the most important place of this science is as the foundation of rational therapeutics

It is obviously impossible within the limited scope permitted to discuss all the subjects covered by the pharmacological laboratories in recent years In relation to certain much talked-of subjects, adequate and complete reviews have recently appeared — such as those on bacterial chemotherapy [1] [2]

The subject naturally divides itself into sections appertaining either to the various systems of the body or to chemical systems concerning drugs of similar constitution In addition, it is perhaps suitable to take note of progress in methods of investigation as well

Since pharmacology concerns itself not only with qualitative aspects of the action of chemicals but also with the quantitative relation between dose and effect and between effect and toxicity, it is inevitable that the modern statistical methods should find increasing application in this field, to the bewilderment of the non-mathematically minded, but perhaps in the long run to the benefit of the science Thus, Foster,[3] in a careful study applying Bliss's method, has evolved a mathematical expression of the relation between hypnotic and lethal doses of certain hypnotics Foster has taken into account the weight and age of the animals and has made an adequate comparison of the lethal and effective doses, allowing for individual variation This should give us a very much better evaluation of the efficacy of a great many drugs

Similar work has been done in Italy[4] developing a mathematical expression of the relation between the concentration and duration of anesthesia in certain of the local anesthetics, and of mixtures of these substances referred to cocaine as a standard The studies show quite effectively that the potentiation seen in the mixtures is due not so much to absolute quantities as to the concentration of the various components

Another study of specific substances of general significance is to be found in the work of Hjort and his co-workers[5] on the seasonal response of albino rats to anesthetics While the toxicity was found not to vary, there appeared to be some variation in the hypnotic effect and in the duration of anesthesia which was associated with the seasons This same author[6] has shown that diet has a distinct effect both on the anesthetic qualities and the toxicity of hypnotics He was unable to correlate his findings with the diets used, but

*Associate in pharmacology Harvard Medical School, associate in medicine Peter Bent Brigham Hospital Boston

demonstrated conclusively that resistance to toxic doses varied with the diet This recalls the origin of the famous acetonitrile test of thyroid potency known as the Reid Hunt reaction, which was based on a long series of experiments demonstrating that the toxicity of many poisons varied with the diet

The general field of pharmacology must also include the study of the vitamins as chemical substances and their effect on the action of other drugs thus it was clearly shown by McIntyre and Burke[7] that thiamin decreases the tolerance of the rat to insulin and that starvation acts in the same direction

It was highly important that the toxicity and pharmacology of nicotinic acid be studied In 1936 it was shown by McCrea[8] that nicotinic acid causes in the anesthetized dog a slow but slight decrease in blood pressure but without any serious effects Unna[9] carefully studied the excretion of sodium nicotinate, showing that 30 per cent of the dose can be recovered in the urine within twenty four hours after oral administration He also showed that the toxicity is extremely low, although that of nicotinic amide is about twice that of the acid The ultimate symptoms were the same, in both cases death being preceded by inability to move, ataxia, slow respiration and cyanosis, of which cyanosis was the most important symptom

Activity in the field of cardiac drugs continues almost unabated The introduction of *Digitalis lanata* has stimulated detailed studies of the action of the various glucosides. As the chemistry of these compounds has been worked out, various workers have tried desperately to upset the dictum of Hatcher uttered many years ago that the doses in biological units of any of the digitalis bodies are equivalent. This holds true practically despite qualitative differences in the action of the various substances The Germans have recently revived the controversy of twenty five years ago in regard to the clinical use of strophanthin—but no proof has been adduced to show that this method of therapy offers more than the standard one employed in American clinics Details of action are of interest pharmacologically, and Moe and Visscher[10] rightly call attention to the importance of careful analysis of the action of the various digitalis bodies In the heart lung preparation they were able to indicate certain differences but one must take issue with their statement that biological standardization by lethal-dose methods does not parallel clinical effectiveness While the parallelism is not perfect it is practical simple and sufficiently close to be useful Of more importance, both pharmacologically and practically is the detailed study of the actual mode of action of the drug on the muscle cell The evidence appears to be that the digitalis glucosides influence the contracting heart by allowing it to do more work per beat and as a mechanism they conclude that either more energy is liberated in the contraction or the efficiency of its utilization is increased They accept the latter explanation based on previous work which shows that the essential action of digitalis in low dosage on the myocardium is an increase in mechanical efficiency It is to be noted that they refer to the failing heart in their heart lung preparation as though it were like that observed in the clinic—which it obviously is not This preparation is a highly artificial one, using defibrinated blood and the results cannot be carried directly into man They studied particularly the glucosides called Digilanid A B and C, and show in tabular form that in a general way the toxicity follows the efficiency The ratio of the dose of the different alkaloids causing increased cardiac efficiency to the dose producing irregularities differs for the three glucosides They lay great stress in their argument on the observation that the efficiency of the heart falls when irregularities of rhythm are produced by digitalis, but just how this applies to their clinical argument is not obvious since this has been known and acted on therapeutically for many years They appear not to realize the artificiality of their preparation, and space is devoted to this work in order to point out the false conclusions that may obtain if results of such preparations are too directly translated in to therapeutics—more especially as the use of these particular preparations, originally made by Starling in 1912, has been suddenly revived, especially in German laboratories.

Factors modifying the action of digitalis are also of importance, and it is necessary to call attention to the work by La Barre and van Heerswynghels[11] in Zunz's laboratory which indicates the necessity for caution in the combination of calcium and digitalis Both with the isolated heart and in whole animals digitalization rendered the organ more sensitive to calcium injections, in that 9 cc. of a 10 per cent solution of calcium gluconate per kilogram of body weight was sufficient to cause death whereas in the undigitalized animal it required 15 cc. They also showed that particular electrocardiographic changes accompanied such injections, indicating that the action was cardiac. It would appear that this might have practical importance

Studies by Heim[12] on the effect of urea on the action of strophanthin on the isolated frog's heart indicate potentiation It seems possible that the binding of digitalis glucosides in the isolated frog's heart goes on in two phases, the first is very short and reversible, and during it the drug is only adsorbed on to the heart muscle in the

second phase an irreversible chemical reaction affixes it to the heart muscle. Since Heim has shown that urea increases the hydrophilic qualities of protein, he has believed that it might have an effect on the chemical reaction which occurs between digitalis and the heart muscle Using both the Straub heart and the isolated profused frog's heart, he demonstrated that the addition of urea to the profusing fluid increased the activity of strophanthin possibly by enabling the heart to adsorb more glucoside This demonstration was possible only with very small quantities of urea and affected both the toxic and therapeutic activity of the drug

Cattell and Gold[13] showed conclusively that data secured from isolated tissue or organ do not necessarily apply to the effects in the whole animal, presumably because of the presence of extracardial tissues, and concluded that bioassay methods must employ the whole animal They also showed conclusively that in man the constriction of the hepatic veins does not occur and cardiac tone in the sense of diastolic size is not at fault, and that the prime action of digitalis is on the force of cardiac contraction

Work begun by Cattell and Gold[14] on skeletal muscle has been transferred to the heart muscle, and the toxic effects of potassium on the heart muscle, particularly the conduction system, is again demonstrated by Nahum and Hoff[15] It was further demonstrated by these authors that the speed of injection makes a difference in the effect Wedd[16] showed that loss of potassium, produced by digoxin on the heart muscle, is an indication of late toxic or injury effect of the drug, because the profound effects of digitalis were produced on isolated heart muscle without significant change in its potassium content

The subject of the autonomic nervous system lends itself peculiarly to pharmacological methods Ever since the neurohumoral mechanism was uncovered by Loewi, a feat made possible by the discovery of acetylcholine by Hunt, experiments similar to his have been conducted in the attempt to identify the sympathin first postulated by Cannon

Crismon and Tainter[17] have continued their study of various pressor amines in the heart-lung preparation, and one important part of the communication is their demonstration that the relative effectiveness of these substances in the heart-lung preparation bears no relation to that in the intact animal Further studies[18] on the action of epinephrine, ephedrine, benzedrine and cocaine on the iris and small intestines again emphasize the variation in action of these closely related substances, and none has yet been found which exactly mimics sympathetic stimulation everywhere

Among the most important studies in this regard are those of Marrazzi,[19] who has utilized the new electrophysiological methods from a pharmacological point of view With leads at the ganglia of the sympathetic nervous system and at the nerve endings, he was able to show that drugs producing an increase in parasympathetic nerve activity provide electrical disturbances at every point where cholinergic systems are found, in the ganglion as well as at the nerve ends

The search for the ideal hypnotic continues unabated It seems unnecessary to describe all the various chemical compounds that have been studied for their hypnotic potency Of considerable practical importance, however, with the widespread use of these drugs for suicidal purposes is the study of the antidotes, the so-called analeptics Feitelberg and Lampl[20] state that narcotics and hypnotics reduce the heat production in the brain Studying the various portions of the brain by means of ingeniously applied thermocouples, they showed that ether and paraldehyde reduce the metabolism at the cortex, particularly as compared with the base whereas phenobarbital has a special action at the base As was to be expected, they found a more active metabolism in the gray matter than in the white substance, and wider variations in the motor region than in the silent regions The analeptics, on the other hand, increase the heat production of both in the cortex and the base of the brain, but the increased heat production starts in the base and spreads to the cortex only when convulsions occur They show that this central increased heat production produced by analeptics can be antagonized by Evipal

Werner and Tatum[21] in the latter's Wisconsin laboratory, where so much work has been done on barbiturates and where picrotoxin was first introduced as an antidote for barbiturate poisoning, have made a close study comparing coramine, picrotoxin and Metrazol as antidotes to barbiturate depression They used as a method continuous intravenous injection in depressed animals and concluded that coramine was unquestionably the least effective and that picrotoxin was the most effective, but reached the peak of its effectiveness later than Metrazol, this suggests that it might be desirable clinically to combine the two in the treatment of depression by barbiturates Studies by Dille[22] have shown that picrotoxin is detoxified with extreme rapidity, and that if slowly administered it is completely eliminated within forty five minutes by rabbits This explains the satisfactory use of this highly poisonous substance in the treatment of barbiturate poisoning

The field of urinary antiseptics has been explored with high hopes and ultimate disappointment for many years However, a real advance

appears to be in the making Owing to the care with which the studies on phenothiazine have been made, comparatively little attention has been paid to this substance in the clinical literature. It is a parent substance of methylene blue and has been studied for a number of years by DeEds and his co-workers[22–8] as a urinary antiseptic This work has been extraordinarily successful, and it would appear that they have hit upon a comparatively little-known urinary antiseptic of great efficiency In the past year they have studied the excretion of phenothiazine and shown that it is excreted as a reversible oxidation reduction system composed of thionol — leucothionol — which confers on the urine highly bactericidal qualities, provided the acidity is kept to that ordinarily associated with the use of mandelic acid, namely pH 5 In addition they treated 49 cases of urinary infections in man with a high percentage of cures The renal and liver function tests in these cases showed no impairment no unpleasant symptoms or gastric irritation appeared, but some secondary anemia was noticed DeEds and his co-workers state that it is an effective and safe urinary antiseptic in daily doses of 1.5 to 2 gm., provided the urine is kept acid and the maximum total dose does not exceed 15 gm

While malaria is not a frequent disease in New England, the study of atabrine is of considerable importance in view of its widespread use in malarial regions. Recent experiments[29] indicate that 5 per cent of the oral minimum lethal dose produces no symptoms, whereas as little as 17 per cent if given over a long period may produce death, with characteristic symptoms consisting of gastrointestinal intolerance, central nervous-system disturbances weight loss, anorexia, weakness and yellowish discoloration of the skin. The drug is both stored and excreted through the liver and kidney, but no evidence of depression of renal function can be demonstrated [29] On the other hand, a progressive diminution of liver function proportional to the dose and duration of the medication, could be demonstrated when more than 15 per cent of the minimum lethal dose was given In this connection an accidental observation[28] showed the possibility of the use of Thio-Bismol in the treatment of malaria since it changed the course of therapeutic malaria when used as an adjuvant in the treatment of the original syphilis

Perhaps in no field has there been more uncritical experimentation than in that of the effect of drugs on the gastrointestinal tract The valuable study by Adams[29] of gastric antacids is of enormous practical importance He has done a remarkably fine piece of work in studying the various antacids utilized in gastric hyperacidity and peptic ulcer He provides a very valuable table showing the relative adsorptive power, acid neutralizing power, dangers from acidosis, rebound secretion of acid, effect on urinary acidity action on the bowels, local protective action, the formation of concretions and possible systemic toxic effects He points out that certain antacids do not cause rebound acidity or produce a systemic alkalosis The absence of gas production is a factor in the use of antacids since the release of gas may help to perforate an ulcer near perforation Adams likewise points out that milk itself is a very valuable antacid Colloids like aluminum hydroxide are as significant for their adsorptive effects as for their antacid properties The new magnesium trisilicate appears to be a valuable addition acting in some what the same fashion as aluminum hydroxide

Of equal value is the study by Beyer and Meek[30] of the effect of amphetamine (Benzedrine) sulfate on the gastric emptying time and intestinal activity When such able physiologists come to opposite conclusions from some previously published work in this field, it serves to make one pause in the clinical use of this drug for its effect on the gastrointestinal tract. The emptying time of the stomach was studied in normal individuals by means of x rays in dogs with fistulas of the small intestine and in isolated segments from dog and rabbit intestines The beginning emptying time was decreased in man from five to two minutes, a decrease of 58 per cent The final emptying time was increased 21 per cent. While the delay of final emptying after amphetamine was definite, it was not so great as the 57 to 436 per cent due to atropine or the 73 to 118 per cent due to ephedrine. The increase in initial rate due to amphetamine may be explained by the disproportionate relation between intragastric pressure and pyloric resistance, the increased pyloric resistance not being sufficient to overcome the increased intragastric pressure due to the drug The delay in final emptying is obviously due to the gastric inhibition

The effect of liquid petrolatum on nutrition has been frequently observed, and the work of Curtis and Kline[31] showing that it interferes with the absorption of carotene re-emphasizes possible dangers in the chronic use of this substance All previous experiments have been on animals and the present experiments on man were divided into two parts. One consisted in feeding diets lower than normal in their carotene content (2958 U.S.P. units of vitamin A) together with oral feedings, three times daily of 4.5 mg of carotene dissolved in 1 cc. of cottonseed oil The diet and carotene were fed alone for a time and then mixed with

20 cc of liquid petrolatum The second part consisted of feeding diets high in carotene (ranging from 24,089 to 32,200 U S P units of vitamin A) with alternating periods when the diet was given alone or with various amounts of petrolatum Petrolatum was given one-half to one hour before meals The patients were in bed From determinations of blood carotene it was evident that 20 cc of liquid petrolatum given two or three times daily before meals, or mixed with carotene dissolved in cottonseed oil, prevents complete absorption of carotene from the ingested material The rise of blood carotene was more rapid when carotene was fed in vegetable oil than when a diet containing large amounts of vitamin A was given Little if any effect on the blood carotene was noticed when liquid petrolatum was given in a single dose of 30 cc at bedtime, in other words, it must be given with or before the food in order to exert its deleterious effect

The effects of hypertonic sugar solutions used as diuretics have recently received attention At first it was believed that they were indifferent substances Gradually some information as to their use and abuse has accumulated Ellis and Faulkner[32] have pointed out that the osmotic effect of 50 per cent sucrose solutions is the equivalent of adding, even if only for a short time, a liter to the blood volume — with the expected effect on the circulation It has also been pointed out that certain substances, especially sucrose and sorbitol, used for this purpose markedly increase uric acid excretion[33] In the discussion of this work, Baehr reported the finding of uric acid crystals in the renal tubules of 2 cardiac patients who had had repeated injections of sucrose This suggests caution in the repeated use of these substances On the other hand, Barker and his co-workers[34] have reported that sorbitol exerts no effect on renal function per se

Other subjects could have been selected for this review, but those mentioned seemed most suitable and most likely to develop practical application in therapeutics at a not too distant date

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CASE RECORDS OF THE MASSACHUSETTS GENERAL HOSPITAL

ANTEMORTEM AND POSTMORTEM RECORDS AS USED IN WEEKLY CLINICOPATHOLOGICAL EXERCISES

FOUNDED BY RICHARD C. CABOT M.D.

TRACY B. MALLORY, M.D., *Editor*

CASE 25381

PRESENTATION OF CASE

A seventy-one year-old retired businessman was admitted complaining of painless swelling of the abdomen.

One and a half years before admission the patient developed a balanitis which was relieved by a dorsal slit of the prepuce. At this time his physician noted an enlarged left inguinal ring but no definite hernia. One year before entry a repeat examination revealed the presence of bilateral inguinal hernias and a definitely enlarged abdomen without evident ascites. About four weeks later in an outside hospital, the patient successfully underwent bilateral Bassini hernia repairs under spinal anesthesia. About a quart of bloody ascitic fluid drained out of the sacs when they were opened. Exploration through the sac opening revealed nothing unusual." During his convalescence x-ray studies suggested a tumor mass to the left flank displacing the transverse colon and stomach. There was no evidence of intrinsic gastrointestinal disease and no gallstones.

Eight months before entry, he measured 42 inches around the torso at the level of the umbilicus. There was shifting dullness and 10 liters of bloody fluid were removed. The fluid showed a red-cell count of 650,000 per cubic millimeter; no other cells were seen.

Six months before entry he was again tapped, and 3 liters of a similar Burgundy wine fluid obtained. The cannula clogged, and no further fluid was withdrawn. He was tapped twice again and on each occasion only about 500 cc. of bloody fluid was drained, clotting prevented flow in each instance, the last being one month before entry. Takata-Ara tests on both the blood serum and ascitic fluid were reported as being negative.

Throughout the present illness the patient stated that his weight had been steady but that his appetite had been poor. He had taken ferrous sulfate for eight months. Occasional slight dyspnea on exertion had been relieved by the abdominal taps. There were no other complaints or symptoms. The family, marital and past histories were non-contributory.

Physical examination revealed a well-developed man showing evidence of recent weight loss. His abdomen was enlarged, the liver was small to percussion, and the spleen could not be felt. There was no definite fluid wave. There was dullness to percussion and a suggestion of a mass in the left side of the abdomen. The rectal examination was negative.

The urine showed a specific gravity of 1.022. It was negative except for occasional red and white blood cells in the sediment. The blood showed a red-cell count of 4,450,000 with 80 per cent hemoglobin and a white-cell count of 12,200 with 65 per cent polymorphonuclears, 21 per cent lymphocytes, 13 per cent monocytes and 1 per cent eosinophils. The stools were guaiac negative. A Takata-Ara test was negative, Bence-Jones protein test negative. A blood Hinton test was negative. The serum nonprotein nitrogen was 21 mg. per 100 cc., the serum protein 8.0 gm.

A gastrointestinal x-ray series revealed a small hiatus hernia of the stomach, which was otherwise not remarkable. At six hours the motor meal had reached the hepatic flexure, which was unusually high in position and the gas shadows in the small bowel extended well up into the right upper quadrant. The examination revealed no evidence of intrinsic disease. A barium enema revealed no organic disease. Intravenous pyelograms showed kidneys which were normal in size, shape and position. The abdomen had a hazy appearance due to fluid. A definite mass could not be outlined.

The patient's temperature, pulse and respirations remained normal. Following a barium enema he noted tenesmus, abdominal distention and difficulty in evacuating the bowel contents, but he was otherwise practically symptomless. About two weeks after entry a peritoneoscopy was performed. About 750 cc. of thin bloody fluid was removed by suction. Occupying the entire left side of the abdomen was a reddish purple mass partly covered with omentum and appearing very vascular. It appeared cystic when palpated with the peritoneoscope. The mass extended well into the left lower quadrant almost to the brim of the pelvis, and about 4 or 5 cm. across the midline. Two days later an operation was performed.

DIFFERENTIAL DIAGNOSIS

DR. ARTHUR W. ALLEN: May we see the x-ray films?

DR. RICHARD SCHATZKI: This looks like an anomaly. The whole intestine lies on the right side.

DR. ALLEN: Could it be due to pressure from tumor on the left side?

DR. SCHATZKI: It certainly could be or it could be due to malrotation of the intestine. It is very striking to see the whole small intestine on the right side such as it is in these two films.

In order to differentiate malrotation of the intestine and displacement of the intestine, it is important to see the position of the ligament of Treitz If this were malrotation, the ligament of Treitz ought to be on the right side of the abdomen instead of its usual position on the left side On looking over the films I think that the relation of the second and the third portions of the duodenum is normal, as is that of the third portion of the duodenum and the first loop of the jejunum In other words, there is no evidence of malrotation and the position of the small intestine is consistent with displacement There is apparent pressure on the descending colon The pyelogram shows nothing abnormal so far as the kidneys are concerned The air-filled stomach seems to be markedly displaced to the right in one of the films and not definitely displaced in another picture taken ten days later, this seems to indicate that the stomach was not displaced by a large mass, unless something had been done in the meantime

DR ALLEN Was the second set of films taken after peritoneoscopy?

DR EDWARD B BENEDICT No

DR ALLEN In any of the films do you see evidence of a mass that appears to consist of encapsulated fluid?

DR SCHATZKI Something must have been producing the pressure on the colon I cannot say whether it was a mass or fluid, because I cannot see a definite edge

DR TRACY B MALLORY Peritoneoscopy was done on the twelfth day, the second set of films was taken on the tenth

DR ALLEN I thought that the fluid Dr Benedict removed might have had some bearing on the x-ray appearance afterward

This is an extraordinarily interesting set of circumstances We have an elderly man who so far as we can tell was in pretty good general health He had relatively normal laboratory findings He had apparently withstood a major operative procedure within a year at another hospital The explanation of his maintenance of weight may have been on the basis of accumulation of fluid, because the record states that he was undernourished and that he showed signs of recent weight loss

The various conditions which might cause hemoperitoneum are not numerous Of course we have the acute hemoperitoneum that may occur following ruptured extrauterine pregnancy or traumatic rupture of the liver or spleen We may also have bloody abdominal fluid from other causes, the two commonest being cancer and tuberculosis The cells in this man's fluid were counted at one time, there were 650,000 per cubic millimeter, over 10 per cent of a normal red-blood-cell count—an enormous amount of blood It is hard to explain this amount of blood on the basis of a ruptured blood vessel per se, that is, a blood vessel of any size such as might be involved in the rupture of a vein or of a small aneurysm, in such a case there would have been a rather different story The possibility of there having been a ruptured aneurysm retroperitoneally, causing an encysted hematoma, is worth mentioning, but I believe the fluid one would find outside the hematoma would not be bloody Furthermore, such a tumor or mass would not have continued to increase in size or to have existed for a period of a year

Dr Benedict stated that at peritoneoscopy he observed what appeared to be a very extensive tumor occupying the left side of the abdomen The probabilities are that this tumor was retroperitoneal If it had been within the peritoneal cavity, it could have been outlined and palpated by the examiner prior to the peritoneoscopy A tumor that is fixed in the retroperitoneal area can come from various sources, the commonest are the pancreas and kidney The fact that he had a normal pyelogram does not rule out a hypernephroma originating at the lower pole of the kidney We have recently operated on a patient who had a carcinoma of the right colon and also a tumor in the left flank The pyelogram prior to operation showed a perfectly normal kidney pelvis on the left, and for that reason it was felt that the tumor could not be a hypernephroma However, such it proved to be, arising from the lower pole of the kidney I think, however, that that was an unusual circumstance and that probably this tumor did not arise from the kidney

In the x-ray examination done outside this hospital, it states very clearly that there appeared to be a mass which dislodged the stomach and transverse colon This was approximately eight months before entry here It is possible that the mass was then confined to such a location and that it had extended by the time the patient came in here so that it could be observed as Dr Benedict found it In spite of a negative Takata-Ara test on two or three occasions, the best diagnosis that I can make is a malignant tumor of the pancreas The tumor was probably cystic in nature and was vascular, because surface vascularity would account perfectly well for the bloody abdominal fluid

DR BENEDICT The peritoneoscope in this case helped us to show that we were not dealing with a simple ascites but with a definite mass which was cystic on palpation and had a very vascular appearance, being partially covered with omentum It was too vascular to warrant taking a

biopsy It did not appear to be retroperitoneal but in the abdominal cavity I thought it was either a splenic cyst—a hemangioma or a lymphangioma—or an omental cyst.

DR. MALLORY Do you want to alter your opinion, Dr Allen?

DR. ALLEN No, I see no reason to do so I should probably jump from the frying pan into the fire if I did

DR RICHARD H SWEET I was privileged to operate on this man It was the most astonishing tumor that I have ever seen From the preoperative examination of the patient, particularly in view of the softness of the abdomen one would have made a diagnosis of ascites were it not for Dr Benedict's statement that there was a tumor The abdomen felt like one with ascites and the reason for that was obvious when we saw the tumor I made a long initial incision but had to enlarge it in order to get the tumor out The mass was as large as any of the ovarian cysts that we see nowadays The reason that Dr Benedict thought it was confined to the left side was that the right half of the tumor was completely covered by omentum The omentum on the left side was thinned out and had a great many perforations in it through which the tumor could be seen It was apparent that the tumor occupied the entire abdomen It pushed the small intestines up and to the right, the duodenum was in normal position, the colon was pushed downward As I exposed the tumor and ligated the many large blood vessels, it was like working in a great puddle of bloody fluid There were enormous vessels all around it and one could finally see that the tumor had arisen from the gastrocpiploic vessels, had pushed the transverse mesocolon downward toward the pelvis and had come out at that point which is exactly where a pancreatic cyst would protrude, however, it obviously had no relation to any retroperitoneal structure The pancreas was under the tumor Much to my surprise we eventually removed the tumor, but as I freed it up it was obvious that the stomach was either invaded or very much adherent so that it was necessary to remove a segment of the stomach wall The tumor perforated in various places and kept evacuating bloody fluid That would explain why the ascitic fluid was so bloody It did not look to me as if it were a malignant tumor

PREOPERATIVE DIAGNOSIS

Ascites, probably due to malignant disease

DR. ALLEN'S DIAGNOSIS

Pancreatic tumor, malignant, with secondary hemorrhage

ANATOMICAL DIAGNOSIS

Retroperitoneal hemangiosarcoma

PATHOLOGICAL DISCUSSION

DR MALLORY On cutting this tumor it was found to consist of a great many cyst like cavities filled with a lot of variously colored fluids, some bright red, others darker and blacker In between the cystic areas were several pinkish areas of tumor tissue Microscopic examination showed that it was a sarcomatous, fairly rapidly growing tumor, consisting almost totally of blood vessels of varying size and differentiation We made a diagnosis of hemangiosarcoma

The patient made a very quick operative recovery and was discharged two weeks after operation

DR. SWEET What is the prognosis in regard to the possibility of local recurrence

DR MALLORY It is a definitely malignant tumor and I suppose there is danger that some tumor may have been implanted in the course of operation

DR. SCHATZKI Was the intestinal wall invaded?

DR SWEET No, it was merely adherent

CASE 25382

PRESENTATION OF CASE

A sixty-nine year-old married American business executive was admitted to the Emergency Ward in a state of shock complaining of extreme pain over the anterior chest

On the morning of admission at 9 20 the patient was suddenly seized while working in his office with a severe pain located in the back between his shoulder blades and radiating around and through the chest to the region of the sternum and precordium The pain apparently spread rapidly upward and downward to involve the abdomen and finally the legs The legs first became numb and then paralyzed He was seen by a physician and placed in an ambulance, where he rapidly went into a state of shock on the way to the hospital. He again complained of extreme pain in his chest.

Six weeks before admission the patient was examined by his local physician and was found to be in apparently good health He had a blood pressure of 220 systolic.

The physical examination revealed a stuporous, obese, pale man who spoke in a garbled fashion There was a small hemorrhage into the conjunctiva There was conjugate deviation of the eyes to the left. No hemorrhage was seen in the left fundus There was a laceration over his right

eyebrow which he had apparently received on falling immediately after the acute onset of the pain while in his office The heart rate was slow and regular, on one occasion it was 44 No arterial pulsations could be elicited in the legs The man quickly failed and died about forty minutes after admission

Differential Diagnosis

Dr Wyman Richardson This is an extraordinarily interesting story that points definitely to one diagnosis though it may be that it would be dangerous to jump to a conclusion But pain which begins in the chest, is excruciating, is accompanied by shock and then tends to go down into the abdomen, and especially if it is associated with symptoms of interference with circulation of the legs, points very definitely to the possibility of a dissecting aortic aneurysm The other conditions that might cause such a severe pain in the chest with shock, such as coronary thrombosis, may be accompanied with abdominal pain but would not in themselves explain the symptoms in the legs

A Physician Would you get paralysis of the legs with shock on the basis of dissecting aneurysm?

Dr Richardson You might very well from arterial occlusion of the iliac arteries I think it is due to the lack of circulation in the legs, and certainly if you get massive embolus to a vessel that goes to an extremity you may have not only pain, numbness and pallor of the extremity but also inability to use it, owing, I assume, to anoxia of the muscle

I cannot seem to think of anything else that could produce this particular picture You can have a pulmonary embolus to account for the pain in the chest and the shock, but then to account for the leg symptoms you would have to assume an arterial embolus with occlusion of the iliac arteries, a sequence which seems rather unlikely in view of the shortness of the story You can have pain due to coronary occlusion and then say ten days later have an arterial embolus as the result of mural thrombus overlying the cardiac infarct, but it would not all happen at once, at least I do not see how it could

There are other things one might look for if this is a dissecting aortic aneurysm One is that the coronary vessels may be occluded This results from the dissection of the aneurysm backward to the aortic annulus with a shutting off of the coronary vessels near their orifice from external pressure, this may give a picture of coronary failure Then you may have hematuria, probably due to a shutting off of the renal arteries with resulting change in the renal tissue, I do not know exactly how this produces hematuria, but it has been noted

Most of the patients with dissecting aneurysm die very rapidly We made this diagnosis on a patient about a year ago, but he recovered and returned just a year later with a recurrence of pain We do not know yet whether this patient had coronary disease or dissecting aneurysm, but he did not have symptoms in his legs He had a very considerable hypertension, and patients with dissecting aneurysm usually do have an antecedent history of hypertension We know that this man had hypertension before his symptoms occurred

The whole story fits very well with a dissecting aortic aneurysm, but there is one question which is still unsettled — the deviation of the eyes Was that due to some interference with cerebral circulation as a result of the aneurysm or do we have to assume that he fell and had a cerebral injury? The latter seems rather far-fetched reasoning because there is nothing in the story that suggests a loss of consciousness following the onset of pain He had shock and fell, but he was not unconscious for any considerable period of time, therefore I shall consider the symptom as one due to cerebral anoxemia

I think Dr Mallory will find that there was a tear or rupture of the aorta somewhere in the ascending portion of the arch and that the two layers of the aorta are stripped and suffused with blood under great tension Whether it ruptured through again down below is difficult to say Certainly it stripped down the whole aorta sufficiently far to cause occlusion of the iliac vessels

A Physician Would you be apt to get a slow irregular heart rate with internal hemorrhage?

Dr Richardson This condition, unless external rupture occurs, is not the same as massive internal hemorrhage The slow rate has to do with the cutting off of the circulation There is failure with a slow rate, it may be that there already is conduction difficulty or it may be just a failing heart that cannot produce a rapid rate

Dr Tracy B Mallory There is one other diagnosis that you could make, assuming that he had a dissecting aneurysm There is always a primary lesion in the aorta which is very uniform

Dr Richardson This disease is certainly an uncommon complication of syphilitic aortitis, so I shall say that you might expect atheromatous disease of the aorta

Clinical Diagnosis

Dissecting aneurysm of the aorta

DR. RICHARDSON'S DIAGNOSES

Dissecting aneurysm of the aorta
Hypertension

ANATOMICAL DIAGNOSES

Dissecting aneurysm of the aorta, with rupture
Media necrosis aortica cystica
Hemopericardium
Cardiac tamponade?

PATHOLOGICAL DISCUSSION

DR. MALLORY You almost certainly would not find evidence of syphilis No true dissection has ever been reported in syphilitic aortitis, and you may or may not have much atheroma but you regularly do have media necrosis aortica cystica that was present here He had a complete dissecting aneurysm of the entire length of the aorta from the level of the aortic ring down to the bifurcation, and then down into both iliac arteries, extending 12 cm in one and 10 cm in the other The dissection had also spread along the inferior mesenteric artery for nearly 10 cm., which if he had lived might easily have resulted in a mesenteric thrombosis and gangrene of the bowel It had also spread some distance along the renal arteries resulting in an initial phase of infarction of the kidney It had spread only a little way up the two carotid arteries, and as we did not have permission to examine the head I do not know exactly what was going on there, however, the pressure in the wall of the aorta is often high enough to occlude by external pressure the small branches that pass out from the aorta So I think it is quite probable that there was no local disease in the cerebral vessels but simply a generalized cerebral anoxemia from narrowing of the mouths of the carotid arteries

When these aneurysms dissect downward they quite frequently extended to the iliac vessels The split invariably occurs in the media, part of which lifts with the intima away from the remaining media and adventitia Extensive dissection of this type is in my opinion only possible in an aorta previously rendered susceptible by degeneration of the media In media necrosis aortica cystica extensive degeneration of muscle fibers and considerable rarefaction of elastic fibers occur in a zone of variable width in the middle third of the aortic media Many small lacunae filled with a thin mucinous material develop, and the remaining muscle and elastic fibers are slowly pushed apart If blood under pressure gets into one of these little cavities it may easily spread to the next one which is but a few microns away Media necrosis cystica occurs only in elastic arteries and hence dissection never extends very far into the branches of the aorta, which soon lose their elastic character and become muscular arteries The chief exceptions are the iliac arteries which are elastic, and dissection often involves them In vessels of such comparatively narrow caliber the ballooned-out intima at the inferior point of dissection forms a ball valve which completely occludes the lumen and circulation is shut off If rupture of the intimal layer occurs, circulation may be re-established

The dissection per se is of course not a lethal disease, and some complication has to ensue in order to cause death That may be occlusion of the renal arteries with resultant uremia or of a mesenteric vessel with consequent gangrene of the bowel A coronary may be occluded and then death comes from myocardial failure. On the whole, however it is much commoner to have the process break through the outer layer of the aorta as well as the inner and rupture into one of the internal body cavities, such as the pleural pericardial or abdominal cavity If it breaks into a pleural cavity or the abdomen death generally results from internal hemorrhage because 2 or 3 liters of blood escape The commonest event of all however, is rupture into the pericardium which happened here. There were 500 cc. of free blood in the pericardium and death was, I think, the result of cardiac tamponade.

A PHYSICIAN Do you not see dissection on an arteriosclerotic basis?

DR. MALLORY You sometimes get a slight degree of dissection in an arteriosclerotic aorta if you have a deep atheromatous ulcer that extends down into the media You may get dissection for a distance of 2 or 3 cm from the ulcer with or without rupture of the aorta, but the degree of dissection is always minimal It is only by courtesy that you can call it a dissecting aneurysm in contrast to cases such as this one where the aorta is split over half or all its length into two layers. That zone of dissection is always in the media You can find muscle cells on both sides of the plane of dissection

A PHYSICIAN Is death commonly delayed a matter of an hour or so?

DR. MALLORY It is often delayed from twenty four to seventy-two hours Dissection in this case apparently occurred all the way from top to bottom in just a few minutes. Sometimes dissection will be spread out over a period of some hours, with a significant interval of time between the appearance of chest pain and abdominal pain and still later the legs become involved

A PHYSICIAN Is this a disease that is characteristic at this age?

DR. MALLORY It occurs in the fourth fifth and sixth decades or later, and infrequently in young people. Dissecting aneurysms, however have oc

curred in the thirties, and I believe one or two have been reported even in the twenties It is perfectly possible, if communication with the lumen in the main vessel is re-established and a rupture of the outer layer of the aorta does not take place, for this whole accessory channel to become lined with endothelium and a permanent circulation to be maintained through it, the patient may live for years with a double aorta, one inside the other Numerous cases have been reported, and we have had one case here Sometimes the original dissection took place so quickly that in going over the history you cannot determine when it occurred

A PHYSICIAN It is quite a rare condition What do you think the incidence is?

DR MALLORY We have been seeing about two or three cases a year for the past six years That is perhaps a little high because it is an uncommon and a dramatic disorder and more effort is made to obtain an autopsy when a dissecting aneurysm is suspected than if one thinks it is ordinary coronary thrombosis It is an uncommon but not a very rare disease, one that any physician might confidently expect to see some day

DR MARSHALL RUFFIN Do you think the initial tear occurs in the intima or in the vasa vasorum?

DR MALLORY That is a point very warmly debated among pathologists Workers in New Haven have been interested in this and have been impressed with the vasa vasorum as a source of the initial hemorrhage They think that after this has occurred the blood strips along the aorta and eventually breaks through the intima The more generally accepted point of view is that the original rupture occurs from the lumen of the aorta outward The almost invariable presence of hypertension is cited as evidence in favor of that view I do not know any possible way of settling the point

A PHYSICIAN Did your record show what the diastolic pressure was?

DR MALLORY No, the history of the long-standing hypertension was not obtained when he was brought in He was moribund, and it was only by communicating with his doctor after the autopsy that we could get the story You have all the information that we possess

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THE THERAPEUTIC USE OF SYNTHETIC VITAMINS

The progress made by biochemists in elucidating the chemical and physiologic properties of the vitamins is one of the outstanding scientific achievements of the last few years. Less than ten years ago practically nothing was known of the chemical nature of the vitamins. They could only be identified by the characteristic anatomic changes resulting from their exclusion from the diet. With the exception of vitamin D there was no understanding of the part they play in metabolism, and therefore no explanation of why they are needed by the body. Today seven vitamins have been completely identified chemically.* Not only this but four of these—thiamin, ascorbic acid, nicotinic acid and riboflavin—are now being synthesized on a commercial scale. Furthermore, a large amount of evidence has accumulated to explain with precision the role of certain vitamins in the chemical processes of the body. Vitamin A has been identified as an essential coostituent of the pigment visual purple on which vision in dim light depends. Thiamin, nicotinic acid and riboflavin are now recognized as essential components of specific enzyme systems which are necessary for the normal metabolism of living tissue.

These laboratory discoveries are of great practical importance to medicine. They have already provided a new impetus to the study of nutritional disease in man. With the aid of pure vitamins, and improved methods for their identification, it has become possible to define accurately how much of each is needed by human subjects in health and disease, and thus the way is clear for a precise understanding of what constitutes an adequate diet. Furthermore, since certain vitamins are now recognized as essential cogs in the machinery of metabolism a new approach is provided for the understanding of disease in terms of the underlying disturbance of vital processes in the tissues.

But by far the greatest innovation resulting from these discoveries is that these four pure synthetic vitamins are now freely available for medical use at a price that competes with the most potent natural sources as the cheapest way of providing these particular vitamins. It is obvious that this constitutes a new therapeutic weapon of considerable potential value. But as always, when some new line of therapy is discovered, it is necessary to consider carefully the limitations of its usefulness.

There is no doubt that syothetic vitamins are valuable in certain circumstances. One advantage is that they can be given parenterally, and are therefore useful in cases of nutritional disease associated with gastrointestinal disorders in which there is doubt whether substances given by mouth are adequately absorbed. They are of great value when there is such a high degree of deficiency of one particular factor that adequate dosage cannot be obtained except by the use of pure vitamin. In severe scurvy for instance, it may be necessary

* These are vitamins A B (thiamin) C (ascorbic acid) D and three components of the vitamin B (G) group—nicotinic acid, riboflavin and vitamin B_6.

to give as much as 1 0 gm of ascorbic acid a day to achieve the best results To obtain this amount from the richest natural source would require over 1500 cc of orange juice, whereas it is easily administered in the form of the synthetic vitamin Similarly the adequate treatment of beriberi heart disease in alcoholics may call for the administration of at least 50 mg of thiamin in the early stages, which could only be supplied from natural sources by the administration of about 600 gm of dried brewer's yeast For the same reason nicotinic acid is of great value in the treatment of pellagra But these conditions in which the clinical picture is dominated by severe deficiency of one particular factor are rare in comparison with the common deficiency states resulting from chronic inanition

It must be remembered that nutritional disease usually arises as a result of insufficient intake or incomplete absorption of the so-called "protective foods" — meat, milk, eggs and fresh vegetables Since these foods contain a number of accessory food factors it is evident that nutritional disease is usually the result of multiple deficiencies, and adequate treatment is not achieved by the administration of a single pure vitamin To meet this need proprietary preparations are now available containing mixtures of several purified or synthetic vitamins One objection to these preparations is their cost Although the price of an individual synthetic vitamin compares favorably with its most potent natural sources, the expense involved in combining several purified vitamins into a single preparation usually increases the cost above that of equally potent natural products To take a specific example, one proprietary preparation containing synthetic vitamin C, together with vitamins A, B_1, B_2 and D in concentrated form, costs the patient at least 50 per cent more than an equivalent amount of cod-liver oil, viosterol, brewer's yeast and orange juice Furthermore, in the case of such preparations in which the vitamin B complex is represented only by synthetic products, it is very doubtful whether they supply all the elements necessary to correct fully the disorders resulting from deficiencies of this group, since there is ample evidence that there are essential factors in the vitamin B complex other than those which are now available in synthetic form For instance, it has been recently demonstrated that the macrocytic anemia and certain neurologic changes associated with deficiency of the vitamin B complex cannot be prevented in animals by the administration of thiamin, riboflavin and nicotinic acid but can be avoided by the use of yeast

It is therefore apparent that mixtures of pure vitamins are more expensive and often less effective than equally potent natural products The basic treatment for nutritional disease continues to consist of a good general diet supplemented when necessary by fish-liver oils, fruit juices and some potent source of the entire vitamin B complex, such as brewer's yeast concentrate Pure vitamin preparations are not a satisfactory substitute for this treatment, though valuable as an additional therapeutic weapon in the special circumstances previously mentioned

The "brave new world" in which food as well as clothing will be synthetically produced, is still so far away that it may be a long time before pills of synthetic vitamins will provide all the essential accessory food factors obtainable from natural sources Until that time arrives there is a definite limitation to the use of synthetic vitamins

THE ORGANIZATION AND DEVELOPMENT OF THE PSYCHOANALYTIC ASSOCIATION

THE publication of a *Bulletin of the American Psychoanalytic Association* forms a landmark in the history of the psychoanalytical movement in this country This publication not only completely reflects the advance in the organization of psychoanalytical practitioners but also shows how rapidly the movement has spread from its beginnings in about 1911 The New York Psychoanalytic Society was the first to be formed, two years after Freud had visited this country in 1909 to attend the celebration of the twentieth anniversary of Clark University The first meeting of the American Psychoanalytic Association was held in Washington in May, 1911, arranged by A A Brill and Ernest Jones Meetings in Boston were soon ar-

ranged by James J Putnam and a group of physi cians met regularly at the home of Morton Prince A third group was organized at the Binghamton State Hospital in New York

At the first meetings of the American Psychoanalytic Association there were general discussions of all aspects of psychopathology and psychother apy Many physicians joined the organization who had had no specific training in psychoanalysis It shortly became evident that meticulous training in psychoanalysis was essential to an adequate un derstanding of this method of treatment. In view of this, the association gradually altered its struc ture to become a federation of local psychoanalytic societies, each local society admitting only physi cians with adequate training At the present time there are societies in Chicago, New York Wash ington–Baltimore, Boston and Topeka, and simi lar groups are now forming in Philadelphia and Los Angeles.

The American Psychoanalytic Association has set a high standard of organization Through the local societies it exerts a wide influence. It is to be congratulated not only on the standards it has set but also on the care that has been used in selecting members. The first number of its bulletin, giving the details of the organization is a valuable historical document.

OBITUARY

ALBERT WARREN STEARNS, JUNIOR

1913–1939

Dr Albert Warren Stearns, Jr., son of Dr and Mrs A Warren Stearns of Billerica, Massachu setts, died in Boston, September 5, 1939, at the age of twenty five

Warren Stearns, Jr., was born in Billerica where he attended the Howe High School. He grad uated from Tufts College, receiving an A.B de gree summa cum laude in 1935 In college he was manager of the football team, a member of the debating team and a member of the Delta Upsilon fraternity

At Tufts College Medical School, which he en tered in the fall of 1935 he was class president throughout his four years, was elected to mem bership in the Sir William Osler Honorary So ciety in 1937, was chairman of the Student Ac tivity Board and a member of the Phi Chi fraternity His degree was conferred magna cum laude, and for excellence in anatomy he was given the annual Anatomy Award last June. He was to have begun a two-year medical internship at the Presbyterian Hospital in New York City last summer

During his senior year in the medical school it was found that he had a Ewing s sarcoma of the left ilium. Facing the implications of this diag nosis, he maintained an objective outlook and in terest in disease generally and in his own dis ease especially Some of his observations will un doubtedly be significant contributions to the nat ural history of this disease Before death Warren Stearns, Jr., had completed each major objective of his life with distinction His youthful person ality gave no quarter to the crushing circum stances of dissolution After death it was found that the odds against which he had been fighting were overwhelming His profession has lost a valiant recruit

D O'H

MASSACHUSETTS MEDICAL SOCIETY

SECTION OF OBSTETRICS AND GYNECOLOGY*

RAYMOND S. TITUS, M.D., *Secretary*
330 Dartmouth Street
Boston

PUERPERAL SEPSIS

With the next issue of the *Journal* this section will present cases of puerperal infection His torically, puerperal sepsis—childbed fever—is as old as medicine The account of no epidemic is more tragic than those of epidemic puerperal in fection The causes attributed to these epidemics were fantastic in the extreme until 1843 when our own Oliver Wendell Holmes presented his monu mental monograph on puerperal fever In this monograph Dr Holmes argued convincingly for the contagious character of the disease and scath ingly rebuked the medical profession for not ac cepting his conclusions

In 1861 Semmelweiss wrote his monumental work on 'The Cause, Concept and Prophylaxis of Puerperal Fever" In this he declared that the infection was caused by the introduction of dead material from without and that the patient was contaminated by vaginal examination As a re sult he established chlorine disinfection of the hands. This single step in his clinic in Vienna

* A series of selected case histories by members of the section will be published weekly Comments and questions by subscribers are solicited and will be discussed by members of the section.

reduced the mortality and the occurrence of puerperal fever to a point lower than it had ever been before When one realizes that his work was done before any knowledge of bacteriology existed, one must appreciate how keen his powers of observation and deduction were

Our present-day conception of the etiology of puerperal sepsis rests on the firm ground of bacteriologic knowledge We now know that puerperal infection is just a manifestation of a germ disease and that organisms follow the same laws in the pelvis that they follow elsewhere in the body

The history of the treatment of puerperal infection has followed scientific knowledge of its etiology very gradually For ages infection in the uterus has been a law unto itself, the medical profession being slow to apply to it the same intelligence with which infections by the same organisms in other parts of the body have been treated There have been eras when all patients running fever after delivery have been curetted There have been eras of uterine douches of alcohol, corrosives, and sterile water There have been eras of conservatism when intrauterine instrumentation and lavage have been out of fashion These periods of conservatism have come about because of the ineffectuality of more active measures, and were not initiated by intelligent deduction The last outstanding advance in obstetrics and one which has placed it on a par with all other surgery and medicine has been an appreciation of the importance of bacteriology This has placed the treatment of puerperal infection on a scientific basis Uterine, vaginal and blood cultures, routinely taken on cases of puerperal infection today, are the basis of sane, intelligent therapy

Some of the cases of puerperal infection which are to be presented may date back twenty-five years or more to a time when hospital records were not adequate Some cases, inadequate in minor details, will be published because they show the type of infection that occurred and its manner of treatment Cases of pyemias, so infrequently seen today, so commonly seen before, methods of treatment now out-moded, as well as cases treated since the advent of chemotherapy will be presented The value of transfusion in certain types of infection will also be emphasized No series covering the field of puerperal sepsis is complete without cases of peritonitis following cesarean section and abortion One of the latter will appear next week in the *Journal*

The importance of puerperal sepsis today is readily recognized when one realizes that approximately 26 per cent of the maternal deaths in Massachusetts in 1938 occurred from this cause It is hoped that the cases to follow may be helpful in reducing this mortality

STATED MEETING OF THE COUNCIL

A STATED meeting of the Council will be held in John Ware Hall, Boston Medical Library, 8 Fenway, Boston, on Wednesday, October 4, at 10 30 a m

Business

1 Call to order at 10.30 a m
2 Presentation of record of last meeting (Published in *New England Journal of Medicine, 220* 1072-1081, 1939)
3 Reports of standing and special committees
4 Appointment of an auditing committee
5 Fill any vacancies in the offices of the Society
6 Action on publication of the *Directory of Officers and Fellows*
7 Incidental business

ALEXANDER S BEGG, *Secretary*

Councilors are asked to sign one of the two attendance books before the meeting The Cotting Luncheon will be served immediately after the meeting

DEATH

WAGNER—EMMA J WAGNER, M D, of West Somerville, died June 12 She was in her seventy seventh year

Dr Wagner received her degree from the Tufts College Medical School in 1905, and was a member of the Massachusetts Medical Society and the American Medical Association

NEW HAMPSHIRE MEDICAL SOCIETY

MULVANITY—JOHN J MULVANITY, M.D, of Nashua, died in Boston on August 13 at the age of fifty-seven

Dr Mulvanity was the son of the late Thomas and Margaret Mulvanity He graduated from Dartmouth College in 1907 and received his degree in 1913 from Tufts College Medical School

A former city physician at Nashua in 1915 and 1916, he practiced medicine in Salem, Ipswich and Leominster He was a member of the Nashua, Hillsboro County and New Hampshire medical societies Dr Mulvanity is survived by two daughters and one son

PATTEE—H SCOTT PATTEE, M D, died in Manchester on August 26 at the age of fifty three. He was a member of the staffs of the Elliot and Balch hospitals and held memberships in county and state medical societies

Following graduation from the local high school, Dr

Pattee attended Tufts College and received his degree from the University of Vermont College of Medicine.

He is survived by a sister

VERMONT STATE MEDICAL SOCIETY

VERMONT DEPARTMENT OF PUBLIC HEALTH

The following communicable diseases were reported to the office of the Department of Public Health during the month of August measles, 44 undulant fever 4 mumps, 43 Vincent's infection, 3 lobar pneumonia 1 chickenpox, 28 rabies, 2 (one dog and one cow) German measles, 6 typhoid fever 3 poliomyelitis, 2 whooping cough 199 and scarlet fever 9

The Laboratory of Hygiene made 2948 examinations, the details of which are

Examinations for diphtheria bacilli	74
" " typhoid fever (Widal reaction)	94
" " undulant fever	168
gonococci in pus	122
" " tubercle bacilli	227
syphilis	1328
of water chemical and bacteriological	285
water bacteriological	277
" milk for bacteria count only	92
milk for chemical and bacteria	81
" milk, submitted for chemical only	3
milk submitted for microscopical only	52
milk, submitted for added water	2
foods	6
" for courts, autopsies	3
" courts miscellaneous	22
Autopsies to complete death returns	2
Miscellaneous examinations	104
Rabies examinations	2
Pneumonia (sputum for typing)	4

The director of the Division of Communicable Diseases reports 24 cases of gonorrhea and 58 cases of syphilis. Much time has been spent this month in the organization of the system of Clinic Physicians throughout the State.

The sanitary engineer inspected 79 camps during the summer season and has reported that 70 per cent of the boys and girls camps used pasteurized milk Several schoolhouses have been inspected and assistance has been given on sewerage problems and water supply systems.

The director of the Division of Tuberculosis and Industrial Hygiene reports a total of 440 persons examined at their clinic from April 1 to June 30 A new nurse has been added to the staff of the Division of Industrial Hygiene with headquarters in the Barre City Hospital

The Crippled Children's Division reports a total of 107 visits to patients during the month. Summer clinics were held at Brattleboro, Barton Barre, St. Johnsbury St. Albans, Montpelier Burlington and Rutland City A total of 430 patients were examined 283 children and 147 adults. The occupational therapy worker reports sales for the month of $677 92.

A new nurse has been added to the staff Division of Public Health Nursing in the Woodstock Unit. This division also plans to try out a posture and nutrition program in two towns this fall General instructions are to be given the teachers by a physical education director The Maternal and Child Health Division reports several conferences. Four hundred and eighty two notifications of birth registrations were sent out during the month.

MISCELLANY

RÉSUMÉ OF COMMUNICABLE DISEASES IN MASSACHUSETTS FOR JULY, 1939

DISEASE	JUNE 1939	JUNE 1938	FIVE YEAR AVERAGE
Anterior poliomyelitis	3	4	21
Chickenpox	332	402	535
Diphtheria	15	8	28
Dog bite	1179	1148	1230
Dysentery bacillary	16	11	4
German measles	39	34	181
Gonorrhea	349	554	512
Lobar pneumonia	146	147	172
Measles	1107	763	817
Meningococcus meningitis	3	3	5
Mumps	157	431	195
Paratyphoid B fever	9	2	6
Scarlet fever	156	332	280
Syphilis	409	388	401
Tuberculosis, pulmonary	306	288	316
Tuberculosis, other forms	3	23	31
Typhoid fever	13	5	18
Undulant fever	5	4	3
Whooping cough	445	379	582

Based on figures for preceding five years.

RARE DISEASES

Actinomycosis was reported from Chelmsford 1; Worcester 1 total 2.

Anterior poliomyelitis was reported from Everett, 1 Malden 2 total 3

Diphtheria was reported from Barnstable, 1 Boston 6 Fall River 2 Lowell, 1 Lynn 1 Quincy 1 Salem, 2, Worcester 1, total, 15

Dysentery bacillary was reported from Auburn 4 Boston, 6 Danvers 1 Lowell 1 Lynn, 1 Worcester 2 Wrentham, 1 total 16.

Infectious encephalitis was reported from Everett 1 total, 1

Meningococcus meningitis was reported from Dalton, 1 Medford 1 Middleboro 1 total 3

Paratyphoid B fever was reported from New Bedford 1 Pittsfield, 7 Waltham, 1 total 9

Pellagra was reported from Boston, 3 Wayland, 1 total, 4

Septic sore throat was reported from Amesbury 1 Boston 4 Cambridge, 1 Fall River 1 Falmouth 1 Peabody 1 total 9

Tetanus was reported from Hudson 1 Medford, 1 New Bedford 1 Wakefield 1 total 4

Trachoma was reported from Boston, 3 Somerville, 1 total 4

Trichinosis was reported from Haverhill 1 total, 1

Typhoid fever was reported from Boston, 1 Brockton 1 Dracut 1 Holyoke, 1 Lowell, 2 Lynn 5 North Reading 1 Quincy 1 total, 13.

Undulant fever was reported from Charlemont, 1 Grafton, 1 Holden 1 Northfield 1 Pittsfield 1 total, 5

Anterior poliomyelitis showed record low incidence except for 1936 which was equalled.

The incidence of meningococcus meningitis and measles was not remarkable.

The reported incidence of scarlet fever showed record low figures.

Pulmonary tuberculosis and tuberculosis (other forms) continued to be reported at low levels.

Undulant fever showed record high incidence.

Typhoid and paratyphoid B fevers continued to show a slight seasonal increase.

Diphtheria German measles, whooping cough mumps and lobar pneumonia were reported below the five year average

The reported incidence of dog bite was not remarkable. Animal rabies showed a sharp increase over the preceding months Foci were noted in Manchester, Plainville, Waltham, Winchester and Wrentham

NOTES

Awards of the Commonwealth Fund Scholarships to four incoming students of the Tufts College Medical School were recently announced These provide $1000 a year to one resident of each of the four northern New England states, on condition that the recipient agrees to practice in a rural community in his state for at least three years following two years internship after graduation The scholarships were awarded to George L Cushman of Medford, Massachusetts, Tufts A B '39 Eugene H Wozmak of East Jaffrey, New Hampshire, University of New Hampshire B S '39, Charles R Blackburn of Brattleboro, Vermont, Wesleyan B S '39, and Stanley W Staples of Gardiner, Maine, University of Maine A B '39

The Charles P Thayer Scholarship and the Elizabeth A Riley Scholarship were awarded respectively to Miss Victoria L. Maxwell of Mamaroneck, New York, and Miss Winifred Sanborn of Boscowen, New Hampshire. Both the Thayer and the Riley Scholarships were founded in 1922 by Elizabeth A Riley, M D , of Boston, Tufts '97 They are open to second year women students at the Medical School

CORRESPONDENCE

AVAILABILITY OF MAPHARSEN THROUGH THE MASSACHUSETTS DEPARTMENT OF PUBLIC HEALTH

To the Editor The Department of Public Health has decided, after consulting a number of authorities in the field of syphilis control, to offer mapharsen for general distribution to physicians, hospitals, institutions and clinics Beginning October I, the drug will be available to physicians in single-dose ampules of 04 gm and 06 gm The former is advocated as the maximum routine dose for women and the latter the maximum routine dose for men For institutions and clinics there will be available also ten-dose ampules of 0 4 gm and 0 6 gm

Order blanks will be available beginning October 1 at the Antitoxin and Vaccine Laboratory, 375 South Street, Jamaica Plain, telephone Arnold 4128 It is requested that all orders for this drug, as well as for all other arsenicals and bismuth subsalicylate, be directed to the Antitoxin and Vaccine Laboratory

The Department wishes to state that, although it is making mapharsen generally available for the treatment of syphilis, and, although it is the almost unanimous opinion in the literature of those who have reported on the use of this drug that it is therapeutically equivalent at least to neoarsphenamine and possibly to old arsphenamine, it will be many years before the full therapeutic value of the drug may be evaluated. It is recommended, therefore, that the use of the standard arsenicals should by no means be abandoned and that preferably the use of mapharsen should be reserved in very considerable degree for those patients who cannot tolerate the standard arsenicals

PAUL J JAKMAUH, M D ,
Commissioner of Public Health

State House,
Boston

NOTICES

JAMES M BATY, M.D , announces the removal of his office to 1101 Beacon Street, Brookline

HARRY L KOZOL, M D , announces the removal of his office to 82 Marlboro Street, Boston

ARTHUR P SHINNEY, M D , announces the removal of his office to 5 Hancock Street, Everett.

NAAMAN STEINBERG, M.D , announces the removal of his office to 520 Beacon Street, Boston

BOSTON DOCTORS' SYMPHONY ORCHESTRA

The Boston Doctors' Symphony Orchestra will resume rehearsals October 19 at Brandon Hall Hotel, 1501 Beacon Street, Brookline These rehearsals will be held every Thursday at 8 30 p m Those interested in becoming members should communicate with Dr Julius Loman, Pelham Hall Hotel, Brookline (BEA 2430)

GREATER BOSTON MEDICAL SOCIETY

The 1939 1940 season of the Greater Boston Medical Society will start with a dinner meeting at the University Club, Boston, on Tuesday evening, October 3, at 7 30 Dr C Sidney Burwell will be the speaker

MAX RITVO, M.D , *President,*
DAVID B STEARNS, M D , *Secretary*

SOCIETY MEETINGS AND CONFERENCES

CALENDAR OF BOSTON DISTRICT FOR THE WEEK BEGINNING MONDAY, SEPTEMBER 25

TUESDAY SEPTEMBER 26

*10 a m –12 30 p m Boston Dispensary tumor clinic.

WEDNESDAY SEPTEMBER 27

*12 m Clinicopathological conference. Children's Hospital Amphitheater

FRIDAY SEPTEMBER 29

*10 a m –12:30 p m Boston Dispensary tumor clinic.

SATURDAY SEPTEMBER 30

*10 a m –12 m Staff rounds of the Peter Bent Brigham Hospital. Conducted by Dr Soma Weiss

*Open to the medical profession

SEPTEMBER 25–29 — American Hospital Association Toronto

SEPTEMBER 29–30 — New England Surgical Society Beverly and Salem.

OCTOBER 3 — Greater Boston Medical Society Notice above.

OCTOBER 13 — Pentucket Association of Physicians 8.30 p m. Hotel Bartlett Haverhill

OCTOBER 15–20 — American Public Health Association Page 441 issue of September 14

OCTOBER 23–NOVEMBER 3 — New York Academy of Medicine Page 977 issue of June 8

NOVEMBER 8 9 — New England Society of Physical Medicine in conjunction with the Academy of Physical Medicine Hotel Kenmore Boston Program to be announced

FALL 1939 — Temperature Symposium Page 218 issue of February 2.

DECEMBER 2 — American Board of Obstetrics and Gynecology Page 1019 issue of June 15

JANUARY 6 JUNE 8–11 1940 — American Board of Obstetrics and Gynecology Page 160 issue of July 27

MARCH 7–9 1940 — The New England Hospital Association Hotel Statler Boston

MAY 14 1940 — Pharmacopoeial Convention Page 894 issue of May 25

JUNE 7–9 1940 — American Board of Obstetrics and Gynecology Page 1019 issue of June 15

DISTRICT MEDICAL SOCIETY

SUFFOLK

NOVEMBER 2 — Censors meeting Page 441 issue of September 14

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INDICATIONS FOR THE SURGICAL LIGATION OF A PATENT DUCTUS ARTERIOSUS*

John P Hubbard M.D.,† Paul W Emerson, M.D ‡ and Hyman Green, M.D §

BOSTON

THE idea of an operation to close a patent ductus arteriosus is not a new one Some time ago, Munro[1] suggested splitting the sternum, thereby exposing the ductus, which could then be ligated or crushed Up to the present this has been held in the light of an intriguing possibility, but, so far as we are aware has not been undertaken except in the case reported by Graybiel, Strieder and Boyer,[2] where it was attempted unsuccessfully as a desperate measure in the face of almost certain death from superimposed subacute bacterial endarteritis. Heretofore the benefits to be gained have seemed less than the risks involved The surgical approach through the superior mediastinum was justifiably considered a dangerous operation. Hesitation also arose from the knowledge that the patency of the ductus usually accompanies other cardiac defects and that ligating it might seriously interfere with some compensatory function demanded by the anomalous circulation

However, from a study of the statistical data compiled and recently published by Abbott[3] it appears that patency of the ductus arteriosus as a single defect may be less rare than it was formerly thought to be Furthermore, an increasing appreciation of the complications arising at an early age prompted one of us (J P H) to inquire anew into the possibilities of correcting this defect With the recent advances in thoracic surgery it seemed that a more favorable procedure might be found Consequently Gross,[4] experimenting in dogs, developed a technic in which the ductus was approached across the left pleural cavity This method promised to be reasonably safe, hence a child who was obviously handicapped by a patent ductus arteriosus was selected for operation The details of this first successful case have already been published by Gross and Hubbard[5]

Now therefore, the introduction of a successful method of ligating the ductus arteriosus calls for a critical analysis of the indications for such surgical intervention Many questions arise concerning the prognosis and complications of this cardiac malformation The two complications of greatest importance are subacute bacterial endarteritis and congestive failure. Just how frequent is subacute bacterial endarteritis with a patent ductus arteriosus? At what age is it most apt to occur? Can surgery prevent it? Who are the patients likely to develop cardiac insufficiency? What is the optimal age for the operation? The present communication is an attempt to answer some of these questions and to arrive at a rationale for ligating the ductus

SUBACUTE BACTERIAL ENDARTERITIS

Of the 1000 cases of congenital malformation of the heart collected from the literature by Abbott[3] and critically studied by her there are 92, shown in her statistical chart in which a patent ductus arteriosus is described as uncomplicated by other defects* Nineteen of these were infants less than two years of age at death For our present purposes these may be excluded from the series on the grounds that subacute bacterial endarteritis does not occur in infancy, and that in early infancy it is difficult to determine whether we are dealing with a pathologically patent ductus or a delayed physiologic closure. There remain then 73 cases, of which subacute bacterial endarteritis was shown to be present in 22.† This gives an incidence for her series of 30 per cent, but it is

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*Since this [illegible] her collection of material [illegible] we took advantage of the opportunity made possible through the courtesy of Dr. Abbott [illegible] review [illegible] her well recorded data in order [illegible] more detailed information than appears in the [illegible]. We [illegible] acknowledge her kind [illegible] help.

†Abbott [illegible] 21 cases where death was due to [illegible] bacterial [illegible]. There is 1 additional case (Table 1, Case 12) in her series complicated by subacute bacterial endarteritis where death was [illegible] in the [illegible] tuberculosis.

important to realize that this is a series of cases collected from the literature They present a striking clinical and pathologic picture, and as such are obviously more apt to be reported than cases of consecutive autopsies performed over a period of forty years

In order to learn more of the age incidence and certain pathological features, an analysis has been

TABLE 1 *Autopsied Cases of Patent Ductus Arteriosus Complicated by Bacterial Endocarditis and Endarteritis*

CASE NO	SOURCE	SEX	AGE AT DEATH	LOCATION OF VEGETATIONS	REMARKS
			yr		
1	Murray [7] 1888	F	36	PA TV MV AV	Rheumatic fever at 26 yr
2	Kidd [8] 1893	F	22	Posterior wall of PA AO	DA entering left branch of PA
3	Rickards [9] 1889	M	17	PA PV wall of A opposite DA	
4	Hochhaus [10] 1893	M	24	PA DA wall of A	Rheumatic fever at 12 yr
5	Gauchery [11] 1900	P	27	PA	PA and A adherent
6	Buchwald [12] 1878	F	21	DA A PA PV AV MV	Aneurysm of PA
7	Hart [13] 1904	M	23	PA DA AV	
8	Hart [13] 1904	F	24	PA DA AV	
9	Hamilton and Abbott [14] 1914	F	19	PA DA	Coarctation of aorta
10	Schlagenhaufer [15] 1901	M	13	PA at orifice of DA	Paradoxical embolus
11	Foulis [16] 1884	F	22	PA DA	Aneurysm of PA opposite PO
12	Chevers [17] 1845	P	Adult	PO	Death from tuberculosis
13	Rokitansky [18] 1862	F	23	DA MV TV	
14	Stoddard [19] 1915	F	17	AV (bicuspid) PO	AV and PV bicuspid
15	Horder [20] 1909	F	42	PO to PV, AV	
16	Boldero and Bedford [21] 1924	M	29	PO to PV AV MV	
17	Abbott [22] 1925	M	33	PO PA PV TV	Foramen ovale patent DA partly obliterated
18	Schlaepfer [22] 1926	M	8	DA PA	
19	Sachs [24] 1892	P	21	PA PV AV	
20	Krzyszkowski [5] 1902	F	17	PO PA	Fibrinous pericarditis
21	Sommer [26] 1910	F	45	PO to PV	
22	Terplan [27] 1924	F	35	Both ends of DA	
23	Trimble and Larsen [28] 1931	F	15	PO PA MV	
24	Hines and Wood [29] 1935	F	19	PO AO PA PV wall of RV	
25	Graybiel Strieder and Boyer [2] 1938	F	22	PO PA	Death from acute dilatation of stomach 4 days after attempt at surgical obliteration
26	Case records of the Massachusetts General Hospital [30] 1938	F	21	PA AV MV	A and PA in apposition with a hole between representing DA
27	Brown [31] 1933	M	12	PO PA AV	
28	Perry [32] 1933	P	36	PO AV extending to MV	
29	Blumer and McAlenney [33] 1931	M	17	PV only	
30	Blumer and McAlenney [33] 1931	M	8	PA, DA	
31	Viswanathan [34] 1931	M	16	PO PA PV AV	
32	Gordon and Perla [35] 1931	M	13	PO PA	Narrowing of pulmonary orifice of RV
33	Philpott [36] 1929	F	6	PA DA	See footnote*
34	Fischer and Schur [37] 1932	F	31	PO PA PV AV	
35	Weinberger [38] 1903	F	37	DA PA A PV	
36	Hammerschlag [39] 1925	F	51	DA PA A MV	Aneurysm of DA
37	Chalier Riou and Roget [40] 1935	P	21	PA PV TV, MV AV A	
38	Roth [41] 1927	P	23	PO	
39	Entz [42] 1911	F	7	MV PO in aneurysm of PA	Aneurysm of PA

Abbreviations DA — *ductus arteriosus* PO — *pulmonary orifice of ductus arteriosus* AO — *aortic orifice of ductus arteriosus* A — *aorta* PA — *pulmonary artery* PV — *pulmonary valve* TV — *tricuspid valve* MV — *mitral valve* AV — *aortic valve* RV — *right ventricle*

patent ductus arteriosus where death was due to other causes It is impossible from a collection of case reports to determine the incidence of this complication It would be necessary to pick out from a consecutive series of general autopsies or well-established clinical cases without postmortem examination all cases of patent ductus arteriosus, excluding infants, and to observe what proportion of these were complicated by subacute bacterial endarteritis Since the condition is not a common one this would mean an undertaking of considerable magnitude in order to obtain a significantly large series In a study of congenital heart disease at the Massachusetts General Hospital, McGinn and White[6] found only 5 cases of uncomplicated patent ductus arteriosus in 7500 made of the cases reported in the literature In Table 1 are listed those collected by Abbott (Cases 1-22), together with an additional 17, making a total of 39 The age incidence is summarized in Table 2 As shown here, the disease is primarily one of late childhood or early adult years The youngest patient (Case 33) on record was a six year-old girl[36*] One death occurred at seven years, and 2 at eight It is noteworthy that 27 (71 per cent) of the patients succumbed before the age of twenty-five, and 19 (50 per cent) of them between sixteen and twenty-five

Table 1 shows another fact of considerable im

*There is some doubt regarding this case. The author described *Streptococcus viridans* vegetations superimposed on sclerotic changes of the ductus arteriosus and pulmonary artery These changes he ascribed to congenital syphilis May they not have been the sclerotic changes sometimes associated with patent ductus arteriosus?

portance. In all but 1 case the vegetations were located at the pulmonary orifice of the ductus or implanted on the wall of the pulmonary artery In Blumer and McAlenney s first patient (Case 29) the vegetations were found on the pulmonary valve alone The pulmonary valves are frequently involved, the other valves less often The location of the vegetations may be reasonably explained on the basis that the intima of the vessel walls at or near the ductus orifice is subject to sclerotic changes.[12 18] Grant, Wood and Jones[48] have

TABLE 2. *Age Distribution of 39 Cases of Patent Ductus Complicated by Bacterial Endarteritis*

AGE IN YEARS	NO. OF CASES	
0–5	0	
6–10	4	
11–15	4	
16–20	7	27 (71%)
21–25	12	19 (50%)
26–30	2	
31–35	3	
36–40	3	
Over 40	3	
Unknown	1	
Total	39	

shown that such sclerotic areas favor the formation of platelet thrombi, which in turn become infected by bacteria in the blood stream giving rise to bacterial endocarditis

From the foregoing it would seem reasonable to hope that ligation of the patent ductus may prevent the development of bacterial endarteritis, but at the present state of our knowledge there is no certainty of this There is no proof that a ligated ductus may not offer just as favorable a site for the implantation of thrombi and vegetations as does a patent ductus In fact a patient (Case 17) described by Abbott[22] suggests such a situation Here the ductus was represented by a fibrous cord on the aortic side, while on the pulmonic side there remained an aneurysmal sac from which arose bacterial vegetations Also to be considered is the fact that recovery from subacute bacterial endocarditis, superimposed on a patent ductus arteriosus, has been reported[41]

Rarely a patient who has already developed bacterial endarteritis on a patent ductus may be considered for operation as in the patient (Case 25) of Graybiel Strieder and Boyer[2] In such a situation it is conceivable that if an operation were done soon after the diagnosis was first made the vegetations might be limited to the ductus and the operation prove successful. In view of the almost certain fatality without intervention it would seem justifiable to take this rather desperate chance

CARDIAC INSUFFICIENCY

The second important consideration is the danger of cardiac insufficiency resulting from the increased work of the heart, due to the arteriovenous communication Much of the arterial blood pumped into the aorta passes through the ductus into the pulmonary circuit This calls for increased work on the part of the left ventricle in maintaining an adequate peripheral circulation, and on the part of the right ventricle in overcoming the pulmonary pressure, which is elevated by the added load of arterial blood. Eppinger, Burwell and Gross,[45] by taking samples of blood directly from the pulmonary artery at the time of operation have been able to demonstrate that the work of the heart with a wide-open ductus may be excessive. It is not surprising, therefore, that a considerable number of patients succumb to congestive failure. In Abbott s series, excluding the infant group of 19 there were 24 of 73 cases (32 per cent) in which death was attributed to heart failure.

On the other hand, patency of the ductus arteriosus may be compatible with a long and active life. Three cases[46 47 48] are on record, in which the patients lived to the sixty sixth or sixty-seventh year Manges[49] reports a woman who went through 8 successful pregnancies

It would seem likely that the development of heart failure depends on the magnitude of the arteriovenous shunt and the extent to which it increases the normal load of the heart Therefore, from the point of view of selecting cases for operation it becomes of the greatest importance to determine which have large shunts and are the ones most apt to develop failure Evidence of a large shunt is available from an understanding of the abnormal circulation A considerable amount of blood flowing from the aorta into the pulmonary artery produces the signs usually associated with aortic regurgitation Corrigan pulse, wide pulse pressure, capillary pulsation, Duroziez s sign and hypertrophy of the left ventricle At the same time the pressure in the pulmonary artery is increased by the added volume of blood, causing engorgement and pulsation of the pulmonary vessels at the hilus of the lung, this may be seen by fluoroscopy The pulmonic second sound if it is not obscured by the loud murmur, is often accentuated Further evidence may appear in the general condition of the patient In the child, if enough oxygenated blood escapes through the ductus so that the heart even despite its greatly increased output, cannot maintain a normal peripheral circulation growth and development may be impaired Obviously the presence of dyspnea or other common signs of cardiac insufficiency indicates a severely overburdened heart

This clinical picture was well illustrated by the first child to have her ductus ligated * She had always been thin, small and underweight and as

described in detail in the preliminary report, had the peripheral signs of aortic regurgitation Following the surgical closure of the ductus, the peripheral signs of regurgitation, present preoperatively, disappeared The pulse pressure returned to normal, the Corrigan pulse and capillary pulsation were no longer present This can be explained on no other basis than that of interrupting the abnormal currents

Emphasis should be put on the signs of regurgitation associated with patency of the ductus arteriosus They should always be looked for and, if present, should serve as valuable evidence of a shunt large enough to throw an undue burden on the heart

OTHER COMPLICATIONS

There are two other complications of patency of the ductus arteriosus which may be briefly mentioned Three cases are on record[44 50 51] in which aphonia was attributed to pressure on the left recurrent laryngeal nerve by the ductus This is undoubtedly a rare condition, but might conceivably serve as an indication for ligating the ductus and relieving the pressure

Second, there is the danger of developing an aneurysm of the ductus or of the pulmonary artery adjacent to the ductus, with the possibility of death from rupture of the aneurysm This also is a rare condition Abbott[3] lists 13 cases of aneurysm of the ductus Hammerschlag[39] has reviewed the subject rather completely and refers to cases in all age groups from infancy to late adult life

CONCLUSIONS

From the foregoing it seems reasonable to adopt the position that any patient with a diagnosis of patent ductus arteriosus should be carefully studied to determine whether or not there is an arteriovenous shunt large enough to impair the normal cardiac function and the peripheral circulation The evidence to be looked for is a delay in the growth and development of the child, any signs or symptoms of cardiac insufficiency and, more specifically, the signs of free aortic regurgitation, congestion or pulsation of the pulmonary vessels at the hilus of the lung as seen by x-ray These findings should be considered as danger signals Once they have been established, surgical intervention should be considered in the hope of abolishing the excessive load on the heart, restoring normal circulation, allowing normal growth and eliminating the danger of heart failure

In regard to the possibility of preventing subacute bacterial endarteritis, the situation is uncertain It will be necessary to observe the successfully treated cases for years before we can say with conviction that this danger has been removed If a ligated ductus does remain free of vegetations and if the surgical risk remains as low as now seems possible, it would then, and only then, appear permissible to operate with the expectation of preventing this fatal complication The optimal age would seem to be in childhood before the second decade, when the incidence of subacute bacterial endarteritis increases, and after the period of infancy In infancy there is little or no chance of developing this complication and, furthermore, the diagnosis is usually difficult Two of the cardinal signs of a patent ductus arteriosus, the thrill and characteristic loud continuous murmur, are apt not to be found Of the 19 infants in Abbott's series, there was only one, ten months old, in whom the murmur was observed to extend into diastole

In any event, a great deal will depend on the surgeon's ability to maintain a low operative risk The dangers confronting a patient with a patent ductus arteriosus are considerable, but they are not so great as a glance at the statistical data in Abbott's chart might suggest In the first place, the average age at death in her series is twenty four, but it is unfair to assume that this indicates a fair life expectancy for the patients for whom surgery might be considered As we have already pointed out, 19 of the group were infants, many in the neonatal period Since we are concerned with the prognosis of older patients, the infants should be excluded By eliminating this group at one extreme of the age distribution, the average age at death for the remainder would be considerably higher A second factor which tends artificially to lower the average age at death in Abbott's series is the proportion of patients dying of subacute bacterial endarteritis, which, as we have shown, is unnaturally large in a collection of case reports These patients usually die young, and this makes the average for the whole group too low Furthermore, the mortality statistics can be misinterpreted in regard to the number of deaths resulting from the presence of the cardiac defect It is not justifiable to add together the 21 deaths from subacute bacterial endarteritis, the 16 "sudden deaths" and the 24 deaths from cardiac insufficiency, arriving at a mortality of 66 per cent to be established as the risk the surgeon has to work against No proof has as yet been given to show that ligation of the ductus can prevent the deaths from subacute bacterial endarteritis Also from a review of the cases listed under the heading of "sudden death" we are not convinced that they were always attributable to the patency of the ductus arteriosus

Neither of these two groups can, at the present time, fairly be included in considering those whose deaths might have been prevented by surgery. From the point of view of establishing such a group, we are left with the deaths from cardiac failure. These occurred for the most part in an older age period. There must be many who live with their patent ducts to an active old age but who, because they do not have an interesting complication and do not qualify for a record age have not been included in any available statistics. Should such individuals have been subjected earlier in life to an operation unless with the assurance of a low surgical risk?

It is our conviction that until more is known of the operative mortality and the future of the cases already treated surgical intervention should not be recommended for all patients with a patent ductus arteriosus, but should be limited to those showing evidence of circulatory embarrassment. For these, in the hands of a skillful surgeon, it has to date proved a successful and reasonably safe procedure.

SUMMARY

In a patient with a patent ductus arteriosus, retardation of growth, signs of aortic regurgitation or evidence of cardiac insufficiency should suggest a shunt large enough to throw an excessive burden on the heart and should serve as an indication for ligation of the ductus.

Ligation of a patent ductus may lessen or altogether remove the danger of developing subacute bacterial endarteritis, but to date there is no proof of this. Final judgment in this regard should be withheld until more is known of the surgical risk, and until it has been shown by years of observation that a ligated ductus remains free of this complication.

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SURGICAL ASPECTS OF OBSTRUCTIVE JAUNDICE*

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WHEN the physician is confronted with a jaundiced patient a decision must be made as to whether medical or surgical treatment is indicated. Surgical treatment should follow the diagnosis of obstructive jaundice. However, before surgery is carried out the two commonest causes of obstructive jaundice, namely common-duct stone and carcinoma of the head of the pancreas, should be differentiated. Such a differential diagnosis is essential because it may alter not only the preoperative preparation but also the time and type of surgical treatment. A comparative study of a group of patients entering the Peter Bent Brigham Hospital with obstructive jaundice led us to believe that there was sufficient contrast in symptoms to enable the physician in most cases to distinguish between carcinoma of the head of the pancreas and common-duct stone without the necessity of numerous laboratory tests.

A comparison of the symptoms of 75 consecutive cases of common-duct stone and 49 consecutive cases of carcinoma of the head of the pancreas is given in Table 1. Since tumors of the body or tail rarely obstruct the common bile duct and produce jaundice, only the cases of carcinoma with involvement of the head were included in our study. It was interesting to note that of 56 consecutive admissions of carcinoma of the pancreas, there were 49 with involvement of the head and 7 of the body or tail, a ratio of 7 : 1.

Probably the most valuable differential finding was the high incidence (100 per cent) of a history of gall-bladder disease accompanying common-duct stone compared to 18 per cent with cancer of the head of the pancreas. The latter percentage may be explained in part by the fact that several of the carcinoma patients had gallstones.

In 91 per cent of the cases with common-duct stone a clear-cut history of biliary colic was found. Although very few (16 per cent) of the patients with tumor had colic, more than 77 per cent of these had distress and pain of varying severity. The various locations of pain are shown in Table 1. Relatively few (18 per cent) of those with cancer of the pancreas had pain referred to the back, in comparison to 67 per cent of the cases of common-duct stone. The high incidence (40 per cent) of epigastric pain in patients with calculus has been previously emphasized.[4]

Eighty-six per cent of the tumor cases had a marked loss of weight, as compared to 25 per cent of the cases of common-duct stone. The average monthly weight loss recorded in 41 cases of tumor of the pancreas was 7 pounds during the illness culminating in operation. Although one fourth of those having common-duct stone gave a history of weight loss, in no case was this as great as that in the carcinoma group, and it may in part be explained by the persistent nausea or intolerance to food which continued over a sufficiently long period to account for an appreciable loss of weight.

TABLE 1. *Comparison of Symptoms and Findings in 75 Cases of Common Duct Stone with Those in 49 Cases of Carcinoma of the Head of the Pancreas (Consecutive Cases)*

SYMPTOM OR FINDING	DIAGNOSIS: COMMON DUCT STONE	DIAGNOSIS: CARCINOMA OF THE HEAD OF THE PANCREAS
	%	%
Past history suggesting gall bladder disease	100	18
Colic	91	16
Location of pain		
Right upper quadrant	53	20
Epigastrium	40	33
Left upper quadrant	5	2
Referred to back	67	18
Weight loss	25	86
Jaundice		
Incidence	81	86
Intermittent	35	12
Vomiting	77	37
Chills	33	8
Sex		
Male	13	69
Female	87	31
Enlarged gall bladder	12	55
Enlarged liver	25	80
Operative mortality	10	31
Age in years (average)	55	58

The incidence of jaundice in both groups was very nearly the same, occurring in approximately three fourths of the cases. The average duration of the jaundice in the carcinoma group was six weeks, with jaundice persisting or increasing in 73 per cent. However, only 12 per cent of the patients with carcinoma gave a history of jaundice exclusive of that associated with the present illness, while at least one third of those with common-duct stone had been jaundiced one or

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more times previously The presence of jaundice, therefore, has not so much differential diagnostic value as the history of intermittent or decreasing jaundice The icteric index was used to determine the degree of jaundice in the majority of cases Pruritus also was a troublesome symptom in many of these cases

Spontaneous vomiting was present in 77 per cent of the group with common-duct stone in contrast to 37 per cent in the carcinoma group Previous experimental and clinical evidence has indicated that sudden distention of the common duct, such as that occurring from an occluding calculus, produces vomiting and epigastric distress [4] Consequently, marked vomiting in the patients with gall-bladder disease is considered a definite symptom indicating a common-duct stone, and has been added to the list of indications for exploration of the common duct. While approximately one third of those with carcinoma gave a history of vomiting, it was not so marked as that associated with common-duct stone In only 2 of the 49 cases of carcinoma of the head of the pancreas was there operative evidence of sufficient duodenal obstruction from the neoplasm to cause vomiting

Chills and fever, which are an indication of cholangitis, did not accompany more than one third of the cases of common-duct stone, although a diagnosis of the latter is usually made, according to the textbooks, on a history of jaundice, colic, chills and fever This symptom was rarely present (8 per cent) in cases of carcinoma

The sex ratio was reversed in common-duct stone and carcinoma according to our reports Eighty seven per cent of the patients with common duct stone were women while 69 per cent of those with carcinoma of the pancreas were men This ratio while not specific, may occasionally influence the physician in making a diagnosis

The age of the patient contributed very little in distinguishing between the two conditions. As would be expected, the average age in patients with carcinoma (fifty-eight) was slightly more than that of those with common-duct stone (fifty five) It is of interest to note that the average age of the group with a proved common-duct stone was approximately five years higher than that of our cases with calculi limited to the gall bladder

The physical findings may be of distinct value in making a diagnosis Tenderness in the right upper quadrant or epigastrium was frequent in the presence of common-duct stone, but an enlarged gall bladder was rarely encountered (12 per cent) It was found in this series also that Courvoisier's law was moderately accurate, and of considerable value in making a differential diagnosis A large, palpable gall bladder in the presence of jaundice is presumptive evidence of neoplasm and was found in 55 per cent of the patients The gall bladder was palpated preoperatively in more than 70 per cent of the cases of tumor involving the head of the pancreas in which anastomosis was done between the gall bladder and some portion of the intestinal tract

Enlargement of the liver was found in over three fourths (80 per cent) of the group with carcinoma of the pancreas, as compared to one fourth of that with common-duct stone. The physical finding of an enlarged liver does not necessarily indicate metastasis from the carcinoma, but more commonly a diffuse enlargement attributable to bile stasis An irregular, hard mass was palpated in the epigastrium in only 9 per cent of the cases of tumor

When the diagnosis of obstructive jaundice due to tumor is made, operative interference should not be denied the patient It is imperative to confirm the diagnosis as well as to rule out the possibility of a calculus In addition, a palliative surgical procedure may afford the patient a more comfortable terminal existence or serve as a first stage operation designed for the removal of the neoplasm Occasionally the symptoms of common duct stone may simulate so accurately those of advanced carcinoma of the pancreas or bile ducts that it is impossible to make an accurate differential diagnosis clinically Patients were seen who had not been operated on earlier because of the diagnosis of advanced carcinoma of the head of the pancreas or the common bile duct, yet at a future exploration a common-duct stone was removed with complete recovery

Of the 49 patients operated on for cancer of the head of the pancreas, the hospital mortality was 31 per cent When those patients having exploration only were omitted, 26 of the 33 on whom a palliative short-circuiting operation was performed survived reducing the mortality to 21 per cent. The short-circuiting operation was performed by anastomosing the gall bladder to the duodenum (cholecystduodenostomy) in 16 cases and to the stomach (cholecystgastrostomy) in 15 cases, and the common duct to the duodenum (choledochoduodenostomy) in 2 cases. On 9 of these 26 patients we have no follow up records, but all had experienced relief of pruritus, pain and jaundice on leaving the hospital Of the remainder who lived for an average of about nine months, 100 per cent were free of pruritus, 88 per cent were relieved of pain and 100 per cent were either completely or partially relieved of jaundice

Since this study was started a valvular type of cholecystgastrostomy has been substituted for direct cholecystgastrostomy in an effort to prevent gross

regurgitation of the intestinal contents into the biliary passages and thus forestall ascending biliary infection [5] The valve effect is obtained by implanting the elongated gall bladder for a distance between the seromuscular coat and mucosa of the stomach When the operations for short-circuiting the gall bladder to the intestinal tract have been used merely as a palliative procedure, ascending biliary infection has not been a serious problem because of the brief survival period But a high incidence of infection has been reported by Whipple[3] when this anastomosis has been used in conjunction with resection of the head of the pancreas Consequently other types and sites of anastomosis have been selected in an effort to lower the incidence of ascending infection in patients in whom there is a reasonable chance of a prolonged survival period We believe that this modification of cholecystgastrostomy answers the major objections to the use of the stomach for anastomosis, since experimentally it has prevented gross regurgitation of stomach contents into the biliary passages By preventing regurgitation the incidence and severity of ascending biliary infection should be lessened, making the more complicated types of anastomosis recently recommended unnecessary

At the time of the short-circuiting operation, the surgeon should determine from the location and size of the lesion whether there is a reasonable chance of its excision If excision seems possible, the anastomosis of the gall bladder to the intestinal tract should be accompanied by a gastroenterostomy Following general improvement, the patient should be re-explored in an attempt to remove the tumor The successful number of resections of the head of the pancreas indicate that the operation of anastomosing the gall bladder to the intestinal tract should be considered as a part of a first-stage operation in much the same light in which the surgeon carries out a transverse colostomy preliminary to resecting a neoplasm of the sigmoid Should the lesion offer no hope of excision, deep roentgen therapy may be given with beneficial effect

When the diagnosis of common-duct stone has been made at the onset of jaundice, operation should be delayed a few days in the hope that the jaundice and biliary infection, if present, will subside Furthermore, elevated blood diastase levels, in the early stages of blocking of the common duct by a calculus, indicate considerable interference with pancreatic function [1] The decision to explore the common duct depends on many factors in the history and symptoms other than jaundice, including the anatomical findings presented to the surgeon by palpation and visualization at operation [2] Although preoperative diagnosis can usually be made, it should be reemphasized that a common-duct stone may produce a silent jaundice simulating malignancy or may fail to produce jaundice at any time Of the 389 consecutive cases of cholelithiasis, the common duct was explored in 38 per cent and a common-duct stone was recovered in 19 per cent

SUMMARY

A comparison is made of the symptoms of the two common causes of obstructive jaundice, namely common-duct stone and carcinoma of the head of the pancreas

The diagnosis of obstructive jaundice can usually be made from the symptoms and physical examination without the necessity of numerous special laboratory tests

Surgical treatment should follow the diagnosis of obstructive jaundice caused by carcinoma regardless of the hopelessness of the preoperative diagnosis, because a calculus may be found The beneficial effect of short-circuiting operations in the treatment of obstructive jaundice from malignancy warrants this procedure

A valvular cholecystgastrostomy has been recommended as a short-circuiting operation to prevent gross regurgitation of the gastrointestinal contents into the biliary passages in an effort to avoid ascending biliary infection

The common bile duct was explored in 38 per cent of 389 consecutive operations for cholelithiasis, and a common-duct stone recovered in 19 per cent

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THE TREATMENT OF ALCOHOLISM*

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RECENT investigations of the physiology, psychology[1] and pathology[2] of alcoholism have rekindled medical interest in a subject which a few decades ago seemed to interest only the moralist and the reformer The expense involved in caring for the increasing number of patients admitted to general hospitals because of alcoholism[3] has also awakened public concern[4] in the matter

Formerly heavy drinking was considered as a mode of behavior entirely apart from the general background and mental attitudes of the patient Medical treatment was symptomatic. The cure of the drink habit was considered almost out of the sphere of medicine. Today it is recognized that alcoholism is a symptom[5] of underlying psychologic or social maladjustments Psychotherapy, in properly selected cases, is in many cases curative

ACUTE ALCOHOLISM

Acute alcoholism is frequently encountered in chronic drinkers[6] but quite often occurs as an isolated phenomenon in an individual who has overestimated his capacity for alcoholic beverages The flushed face, dilated pupils injected conjunctivae, thick speech, staggering gait and ataxia of the acute inebriate are familiar to all Many factors, however, are involved in determining the effect of a given quantity of alcohol in any individual

Since alcohol is uniformly distributed throughout the body, modified only by the solubility of alcohol in various kinds of tissue, the greater the weight of the subject the less the effect of a given dose will be Thus, a 50-cc. portion of absolute alcohol or its equivalent taken as whiskey beer or wine will reach a higher concentration in the blood and nervous system of a 125-pound subject than in one whose weight is 200 pounds The alcoholic content of whiskey being approximately six times that of beer it is obvious that six times as much of the latter must be ingested in order to obtain an equivalent amount of alcohol However other factors than mere dilution are involved in the differences observed in the intoxicating qualities of different alcoholic beverages It has been noted[7] that even if gin or whiskey is diluted with water so that the alcoholic content of the mixture is the same as beer, the effect of the gin or whiskey in rapidly elevating the blood alcohol level when ingested on an empty stomach is greater than an equivalent amount of alcohol in beer This is probably due to buffer substances in the latter which slow its absorption

Food in the stomach, especially food containing fat, such as cream butter, bacon and so forth, also measurably slows the absorption of alcohol and results in lower but more sustained elevations of blood alcohol and similarly diminishes the degree but may prolong the duration of intoxication

Fatigue, recent infections, exposure and general debility all render the individual more susceptible to the intoxicating effects of alcohol It also appears that there is definite tolerance established in persons who use alcohol regularly, so that they are able to drink a given amount with less intoxication than can non habituated persons

Pathology

There are few postmortem findings which are peculiar to acute alcoholism Invariably there is hyperemia of the cortical gray matter associated with edema and flattening of the convolutions of the brain but this may be seen after other types of poisoning A chemical analysis of the brain tissue is the only approved way to establish the presence and quantity of the responsible agent, and such an examination is usually required by the medical examiner

Management

Although acutely intoxicated persons sometimes require medical care the vast majority recover without such assistance. Of those who must be cared for by physicians, most suffer from medical and surgical complications, largely of traumatic origin Deaths when they occur, are more commonly the result of the complications than of the acute medullary depression and respiratory failure which alcohol can produce The treatment of complicating conditions is foreign to this discussion and has been considered under the appropriate divisions of this work

In uncomplicated acute alcoholic intoxication the chief measures of therapy must aim to increase the oxidation of alcohol to promote elimination to restore depleted water and mineral reserves and to produce sedation Gastric lavage should never be used in comatose or unconscious patients because of the danger of introducing fluid into the

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lungs and increasing the respiratory embarrassment already present Its use in conscious patients is debatable Many cases of pneumonia in alcoholic patients who have been so treated have resulted from such procedures When the blood alcohol concentration approaches the fatal level, that is 500 mg per 100 cc, the respiration is very slow and shallow and the use of carbon dioxide and oxygen mixtures is recommended to stimulate breathing Caffeine sodium benzoate, strychnine and picrotoxin in appropriate doses provide useful agents to stimulate the patient generally

During the entire course of treatment the patient must be kept warm, since a vast amount of heat is lost through the dilated skin vessels In the early stages of intoxication there is a misleading subjective feeling of warmth, for blood is drawn from the visceral to the peripheral areas, causing considerable heat loss from the skin If vomiting has occurred early the course of the intoxication is limited, but the loss of gastric hydrochloric acid from repeated vomiting may be serious There is a measure of acidosis as a natural result of intoxication, but not sufficient to counteract a severe alkalosis from vomiting Fortunately most patients with acute alcoholic gastritis are achlorhydric Within a few hours after the gastrointestinal tract is free of alcohol, the blood alcohol concentration falls and consciousness is regained

Frequently the physician's aid is not sought until the acute period is passed Then the "hangover' is the chief complaint, and this requires essentially different treatment than does acute intoxication A liquid diet is recommended, although the patient seldom wishes to eat at all Fifty grains of bicarbonate of soda, ½ oz of saturated magnesium sulfate or two Seidlitz powders and 10 gr of aspirin may be prescribed At this stage various sedative and analgesic drugs may be useful, as well as carbonated and mineral waters and fruit juices If the patient is very restless, 3 to 4½ gr of Sodium Amytal or 1½ to 3 gr of phenobarbital may be necessary in order to quiet him Rest and sleep are essential The relaxation following intoxication may cause a prolonged sleep, which is desirable provided the sleep is natural

In cases with coma persisting for twenty-four hours or longer the prognosis is ominous

CHRONIC ALCOHOLISM

Opinions as to what constitutes chronic alcoholism vary widely At one extreme stand those who maintain that the daily moderate use of beer or wine at dinner constitutes chronic alcoholism, while at the other extreme are those who insist on constant intoxication as the criterion for such a diagnosis I reserve the term "chronic alcoholism" for those individuals whose drinking interferes in their normal occupational and social activities, whether this occurs constantly or periodically Further division of chronic alcoholic patients into two groups may be made In the first group are the constant steady drinkers, the "addicts," who most generally commence the day with a drink on awakening These individuals drink not only to relieve psychologic distress but also to overcome symptoms resulting from the previous day's alcoholic intake In their treatment therefore are two problems the relief of the symptoms due to alcohol and the relief of the symptoms (physiologic or psychologic in nature) which led them to alcoholism In the second main group of chronic alcoholic patients are the periodic drunkards, who go on sprees which may last for days, weeks or months, but who are continent drinkers or even abstainers between bouts In these patients psychologic problems are dominant and the results of psychotherapy are most gratifying

Pathology

In chronic alcoholism the actual damage to the nervous system usually results from nutritional deficiencies rather than from the toxic effect of alcohol on tissues These may be due to the neglect of proper diet or to the improper absorption of food resulting from chronic gastritis and intestinal and metabolic changes The increase in vitamin requirements necessitated by the high caloric value of alcohol is usually neglected Death in chronic alcoholism may be due to trauma,—subdural hemorrhage is common,—or it may result from intercurrent infections In these cases, the pathologic changes are peculiar to those conditions Death may occur in the course of neurologic disease which develops after a long period of drinking This may take the form of polyneuritis or even frank psychosis The histologic picture in polyneuritis is one of central and peripheral neuronitis with swelling of the ganglion cells, especially in the motor or frontal cortex and the motor horns of the cord, accompanied by degeneration of the nerve fibers, predominantly of the myelin sheaths in both the peripheral and the central nervous systems It appears probable that the polioencephalitis superior of Wernicke, as well as the Marchia-Fava syndrome in chronic alcoholism, is the result of dietary deficiencies

Medical Treatment

It must be again emphasized that the main organic damage inflicted by alcohol on the human nervous system is due to nutritional deficiencies rather than to primary toxic injury from the alcohol

itself The immediate treatment requires that a diet well balanced and adequate in minerals, protein and vitamins be taken Usually it is necessary to supplement the diet with additional vitamins Thiamin chloride is useful in doses of 5 to 10 mg daily

Sedatives, such as 15 gr of sodium bromide or ½ to 1 gr of phenobarbital given three or four times daily, may be of value in combating the withdrawal symptoms encountered in the chronic alcohol addict.

In recent years amphetamine (Benzedrine) sulfate has been used successfully to counteract the depression and let-down which follows the complete withdrawal of alcohol[8] The use of this drug produces a mild elation for several hours. Ten milligrams twice daily by mouth has been found effective. Whether the benefit seen among alcoholics who are given the drug results from psychologic or physiologic factors is uncertain, but in many cases its use is followed by improvement

Psychological Treatment

When there is marked deterioration of personality and the development of psychotic behavior, the patient should be examined by a psychiatrist if possible. In many circumstances this is impossible and psychiatric handling of the case must be undertaken by the general physician

Before psychotherapy is begun, it is essential that the patient should have become alcohol free following such symptomatic measures as will calm him enable him to rest, restore normal elimination and permit him to regain normal fluid balance The recent memory of the unpleasant symptoms associated with intoxication may be adequate to restrain the patient from drinking for a few days, but memory soon dims, and unless a new program of activity is outlined the cycle of drinking is begun again The importance of physical well being as a fundamental step in promoting mental stability is one of the most basic truths in psychiatric ideology and should be utilized at this point.

A number of separate trends in the treatment of alcoholism are now being followed by psychiatrists, psychoanalysts and specialists in internal medicine who are interested in the application of psychology in therapy with particular reference to personality factors and the "mind-body problem Patients with neurotic personalities and immature emotional development are the ones who respond most favorably to psychological treatment

Those patients with psychopathic personalities who may be pathological liars should not be included in the group considered suitable for psychotherapy, nor should one include patients suspected of being psychotic in the clinical sense Psychotherapy has not been very successful in the treatment of schizoid individuals who are also alcoholic, or patients in the manic-depressive group Mental defectives and cases of constitutional psychopathic inferiority are not promising subjects for psychotherapeutics

An unhappy childhood, especially where one or both of the parents have been alcoholic, may predispose the individual to the behavior pattern of drinking The social and occupational history, the patient's attitude toward himself and to his environment are the best criteria of selection for treatment For patients whose history suggests deep-rooted, unconscious difficulties psychoanalytic treatment may be more suitable.[9] These cases may be differentiated from cases appropriate for less intensive psychotherapy The intelligence and cooperation of the patient require careful consideration before any psychotherapy is recommended

The general attitude toward a chronic alcoholic must embody the concept that his condition is tantamount to a mental illness and that his personality has been damaged at some time. The pattern of drinking belongs in the realm of symptomatology One of the chief errors in the past has been to consider the problem of drinking as an entity without consideration of the patient's total personality in its situation[10] His thoughts, emotions and reactions must form the material of therapy The drinking as behavior may then be evaluated in its true significance and usually as a symptom

In any science a method is valid only in so far as it is appropriate for use with the material under examination A single chemical analysis cannot be applied for all substances Likewise one particular method of treatment may be most applicable to one particular type of alcoholic patient. Much important clinical and psychiatric investigation remains to be carried out along these lines in order to answer many questions that arise in this connection

Preventive measures can be easily formulated but they are difficult to realize in practice. Education of the young on the use and dangers of alcohol may help in certain cases, but there is also the possibility that it may only serve to stress the fact that drinking is a socially approved form of behavior A rational program of mental hygiene in childhood along with the warmth of affection and the satisfactions and security of normal family life are the best safeguards against the development of alcoholism The facing of and adjustment to reality the building of character and the maturing of a normal personality are more likely to be accomplished under such conditions. The

acceptance of life, of things and of conditions as they are and the fitting of oneself to them assist achievements in personality development that may well prevent the formation of neurotic patterns in general and of alcoholism in particular

In addition to the features already mentioned, other traits and characteristics should be considered in the selection of patients Personality traits that are significant in selection are self-confidence or lack of it, feelings of inadequacy, resentfulness, timidity, irritability, easy fatigue, stubbornness and exceedingly strong powers of rationalization Each of these, present or absent in varying degrees, alters the clinical picture enormously and renders its interpretation and appraisal often very complicated in individual cases, especially in regard to prognosis A strong ability to rationalize is perhaps the commonest characteristic of the alcoholic with a neurotic personality The physician must learn to deal with it effectively so that in the course of treatment the patient may come to recognize for himself his own psychological mechanisms These are often hysterical in their form and dynamics The tension of anxiety must be recognized, for too often it is a symptom physicians tend to overlook or undervalue If the patient gives evidence of physiologic disturbance of the nervous system when he lacks his customary amount of alcohol, he is apt to be suffering from anxiety Drinking is fundamentally thought to be an escape mechanism, and as such becomes a handy defense against underlying anxiety When in the course of treatment the patient is able to regard himself in a non-aggressive way, or with good insight, anxiety may diminish, and the need for a defensive or dissociative attitude may be lessened

The chief danger in selecting cases for treatment lies in what may for lack of a better phrase be called the insincerity of the patient Only from experience can the value of the patient's insight toward himself and the external world be judged Excessive eagerness for treatment and unusual co-operation by the patient in the beginning are not always good signs In general, the prospective patient must be evaluated in the same way that all neurotic individuals are appraised The therapist must try to determine how much "normal' or "healthy" ego the patient may be able to direct toward the "neurotic" or "sick" part of the ego One authority (Hendrick[11]) speaks of this as "ego potentiality"

It has been frequently stated "The patient must have *some* insight If he does not want to get well you cannot *make* him", "You can lead a horse to water, but you cannot make him drink", and so forth In sensing and dealing with these elements and their implications obviously the imponderable factors of intuition, skill and art play important parts in the situation

It must be remembered that although the patient may have taken to alcohol as a pattern, one may assume that he might have "chosen" a specific or general fear, an obsession or a compulsion In the first interview one can attempt to estimate the strength and sincerity of the patient's desire to recover It may be that a trial period of treatment is advisable with the understanding that the patient is not obligated to continue unless he wishes A general history should be taken, including particularly the facts about the patient's social life, his work and his general habits Corroborative information obtained from relatives and friends is sometimes helpful and revealing, as it can serve as a control for the veracity and objectivity of the patient's own statements In some cases, of course, it is not possible or advisable to obtain this information

In addition to catharsis and suggestion the aims of the treatment should be to redirect thinking into positive channels, to establish good and regular habits and to educate the patient to get along without alcohol This is done by and with the development of a special relation of confidence between the patient and the therapist, sometimes called the "transference" relation, which is extremely important to success The treatment of the patient may take many hours or may extend indefinitely During this time an attempt is made to help the patient learn to relax without the use of alcohol Physical activities, competitive or group sports (also dancing) and recreational facilities can be utilized to great advantage He may be given strong suggestion that he will become increasingly able to handle his problem and that he can do this for himself (he must not take treatment "for the sake of someone else") He should be encouraged to think positively at regular times during the day Some patients are helped very much by positive autosuggestion A routine should be planned for every hour of the day, and written down for frequent reference Plans may be discussed and evaluated from time to time, and may be changed as circumstances require Throughout the treatment, it must be emphasized that extraneous and apparently non-pertinent material will enter the treatment situation, but this may often be used in a constructive or educational way The thought of alcohol and past pleasures will come and go, but may be utilized in relation to their consequences in the patient's place in life

His rationalizations should be revealed to him insofar as it is possible for him to see them in himself

Above all, the patient's life history must be analyzed, not necessarily in the intensive psychoanalytic style, but in the broader and more empirical psychotherapeutic way. Incidents, emotions, thoughts and events of the patient's life should be re-examined and interpretations may be given for them as the patient becomes able to accept them. This inventory of the personality may be simple or complex according to the intelligence of the patient. It is, however, exceedingly important, and one of the crucial features of the whole procedure. The therapist should encourage the patient to wish to look at himself objectively, directing his thought toward unconscious as well as conscious levels. The patient can sometimes be led or influenced to desire to change himself. For drastic changes he must have courage and patience in order that he may face the potentialities of this unfolding of his larger and (it is to be hoped) more mature personality.

The therapist himself needs certain qualifications if he is to succeed in treating alcoholics. Some successful therapists were themselves at one time alcoholic, but this is not a necessary qualification. The best instrument in the armamentarium of psychotherapy is self-knowledge. Recently an article[13] appeared that commented pointedly on therapeutic endowments. It listed:

> A wide and certain knowledge of men in the same sense that, for instance, the successful man of affairs understands that expression.
>
> An ability easily to transcend one's own private self (self-objectivation).
>
> Certain ethical character and intelligence traits which seldom occur in one person, including freedom from infantile and neurotic tendencies.
>
> An inborn call to leadership or what Prinzhorn calls "instinctive vital conviction of direction."
>
> The self-confidence of a free manhood which is not to be gained by any intellectual means but solely by self-proving with the complete co-operation of the personality.

Occasionally the family is the greatest obstacle in the progress of treatment. Often its members must be educated not only to the present condition but to the more mature development of the patient. Frequently a wife, for example, has adjusted herself to the neurotic personality of the husband and has become accustomed to his immature or unstable behavior. If the patient becomes more mature during treatment — and sometimes more aggressive — she needs preparation to face these alterations in the expression of his personality. The family should be prepared to expect relapses, and should be warned against overoptimistic promises from the patient. They must be especially cautious of the patient's false sense of security, which may frequently become manifest and complicate the situation.

There is controversy in this, as in every field of inquiry. Whether to taper off or stop drinking suddenly is a much mooted question. A slow reduction of alcohol is widely recommended, for by this process the patient himself determines his behavior without coercing him. Some therapists feel that a complete halt in drinking is of major importance. Some substitute soft drinks or fruit juices. The therapist should never scold or nag the patient or comment on it in any way that suggests bringing moral pressure to bear on him.

Some therapists[13] treat patients by first changing or simplifying the environment. Interesting results have been obtained by Wayne Sarcka on his ranch at Cuttingsville, Vermont, by this method. Any plan may have certain advantages, but generalizations are fallacious since each alcoholic case may be different. Sometimes therapy is successfully carried out by office visits. The question of voluntary or forced treatment is also important. It is natural for relatives to want to force therapy on the patient, but if the alcoholic patient is neurotic his problem is not wholly a question of behavior. It may be advisable in some cases to force treatment, unless the need of a dramatic change is unconvincing. The decision between psychoanalysis and psychotherapy[14] should be made by a competent psychiatrist, in consultation with a psychoanalyst, and to some extent must depend on practical considerations.

* * *

These are the basic features of the treatment of alcoholism. The problem of alcoholism is complex, and the statement of William James that no generalizations are better than the details on which they rest must be kept in mind as an epigram of definite significance where alcoholism is being considered.

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REPORT ON MEDICAL PROGRESS

THE TREATMENT OF FRACTURES

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THE treatment of fractures was given its greatest impetus during the World War. This is perfectly natural, since the demands for adequate treatment of wounded soldiers were great. To cope with the unparalleled situation, the entire surgical world was forced to focus its attention on the best ways and means of treating fractures as well as other surgical conditions. Thus many improvements appeared during the War, such as the universal recognition of the Thomas arm and leg splints, the development of skeletal traction, the use of Carrell–Dakin solution, the importance of first-aid splinting before the wounded man was transported, and so forth. All these phases of fracture treatment and many others were a distinct improvement over older methods, and because of them, mankind has been reaping the benefits ever since.

I shall not attempt a review of the treatment of fractures, or dwell upon well-established and accepted methods of treatment, but rather make mention of only those elements that have shown progress or pointed toward improvement in the handling of fractures during the past twenty years. To my mind, the evolution of fracture treatment has been outstanding, and while it was most rapid during the days of the World War, it has continued with new solutions of old problems and better results as time goes on.

I shall mention first the fractures of the upper extremity, then those of the skull and trunk, and lastly those of the lower extremity.

Fractures of the fingers still remain a very serious problem, especially when complicated by infection or joint involvement. Unfortunately, in many hospital clinics, finger fractures are not given the importance they deserve and are frequently treated as minor cases by the intern or resident surgeon. This is a grave mistake and accounts not only for the many crippling results that are too often apparent, but also for the fact that little if any progress has been made in the treatment of finger fractures. In certain cases, where traction on one or more phalanges is of paramount importance, it is now customary to drill Glover's surgical needles or fine short Kirschner wires through the distal phalanges and utilize skeletal traction in this way. Of course this form of traction is effective only if associated with a cock-up splint in which a wire finger splint or a banjo splint is incorporated. When ultimate stiffness of finger joints or ankylosis is feared, the splinting must be so designed as to maintain the involved fingers in the optimum positions for function. The substitution of skeletal traction for adhesive plaster traction in the treatment of difficult finger fractures is the outstanding improvement in our treatment of them so far. When the fractures involve the phalangeal joints, the question of operation often has to be considered, and such a decision requires the very best of surgical judgment. No set rule can be laid down as a guide for all cases.

Fractures of the metacarpal bones do not, as a rule, present a difficult problem, but one type should be mentioned which often is difficult to reduce properly. I refer to the metacarpal fracture with marked dorsal angulation, the kind that a roller bandage in the palm only accentuates and traction on the corresponding finger also fails to straighten out. This fracture in an adult frequently results in marked deformity and some disability unless open reduction and fixation of the bone fragments is accomplished. Within the last few years, suitable fine instruments and fixation materials have been made purposely for fractures of the small bones of the body, and with these, such intractable fractures can now be successfully treated by operation.

The commonest injury of the carpal bones is fracture of the scaphoid. We have now learned the necessity for rigid immobilization of this fracture over a prolonged period, inasmuch as there is a marked tendency to nonunion, but what is not stressed so much as it should be is the technic of immobilization. Fractures of the scaphoid should be held in a plaster cast that includes the proximal phalanx of the thumb as well as the palm of the hand, with the wrist in a position of dorsiflexion and radial deviation. The inclusion of the thumb is essential and constitutes one of the striking improvements in our treatment of this fracture.

If after immobilization for four months there is pain and disability, with clinical and x-ray evidence of nonunion, operation is indicated, or if early postreduction x-ray photographs show that the fragments are not in close contact, it is useless to continue immobilization alone, and open

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reduction with bone pegging or drilling is called for

The proper operative procedure for nonunion of the scaphoid is still a debated point, some surgeons preferring simple drilling of the fractured fragments and others the employment of a bone peg or graft. So far as is known at the present time, both operative methods seem to be successful in obtaining union.

In fractures of the lower end of the radius (Colles fracture), reduction is best maintained in the great majority of cases by placing the forearm and wrist in the Cotton-Loder position. However, this position should not be maintained for more than ten days as a rule, at the end of this time the hand is gently brought up into a straight line, the ulnar deviation being maintained and is again immobilized. In certain cases where the reduction cannot be maintained after splinting, heavy wires or pins have recently been inserted into the bone fragments, and while these fragments are held in their proper reduced position the pins are incorporated in a casing of hardened material or plaster of Paris. Taylor and Parsons[1] have emphasized the significant role played by the discus articularis in these fractures, and Haggart[2] has very properly stressed the danger of too early mobilization when they occur in the aged. It should be mentioned that the second week is the danger period of this fracture, when the bone fragments have a tendency to slip and that routine weekly x-ray photographs should therefore be taken during the early stages of treatment.

A word of caution may be given in regard to fractures of the bones of the forearm. When only a single bone, such as the radius or the ulna is fractured, it is most important to include x-rays of both the elbow and wrist joints, in order to rule out a dislocation of the head of the radius in case the ulna is broken, or a separation of the radio-ulnar ligament at the wrist in case the radius is fractured. It is perfectly obvious that if one of these two bones is broken and shows any degree of shortening the other bone must either have given way or its ligaments have ruptured.

Usually an accurate reduction of the fracture with restoration of normal bone length will correct the accompanying dislocation at either the wrist or elbow but to ensure a perfect result open operation with internal fixation of the broken bone fragments is often indicated. Should the head of the radius continue to remain unreduced after accurate reduction of the fractured ulna, open reduction of the dislocation is demanded.

Fractures of the elbow joint are now treated by a greater variety of methods than in the past and with greater success. As a general rule, complete fractures of the olecranon are seldom treated by the closed method any longer, since an open reduction can restore and maintain the normal anatomy and allow earlier motion and improved function. Whether pins, screws, wire or fascia is to be used as a means of internal fixation of olecranon fractures depends on the character of the fracture and the individual operator's choice. The fact that this fracture has come to be considered as one calling for open reduction, if possible, is a step in the right direction.

Certain supracondylar fractures of the humerus extending into the elbow joint with wide separation or displacement of the bone fragments are being treated in these more recent times much more effectively by means of Kirschner wire traction through the olecranon or by open operation. The surgical approach to the elbow joint through its posterior aspect has done much to facilitate the open reduction of these fractures when operation is desired. Fractures of the head and neck of the radius are frequently serious problems that require fine surgical judgment. The general growing tendency is to carefully resect the fractured radial head if it is comminuted or shows displaced fragments and to do the operation within the first two weeks after injury, since end result studies prove that delayed resections do not give the same good results as early ones. It is therefore probably unwise to wait and see what rotation the forearm will develop before deciding upon operation if there is much doubt about it in the beginning.

Many new splints have been devised for treatment of fractures of the shaft of the humerus, most of them being of the ambulatory type, but none is suitable for all the various fractures of this bone. Unless the patient is bedridden for some other reason a fracture of the humerus alone should not be considered as sufficient cause for keeping him in bed. As a rule the simpler the apparatus, the better. Rogers[3] has correctly stated "When intelligently treated by any suitable method the end results of fractures of the humerus are excellent." A word of warning should be mentioned, however with reference to the danger of nonunion resulting from too much traction or overpull in humerus fractures. Those occurring in the mid or lower third are the ones where the danger of shortening or overriding is of much less consequence than the danger of pulling the bone fragments apart. As a rule fractures of the humerus can be best treated with the patient up and around, and gravity alone provides sufficient traction to restore bone length. When the fracture occurs in the region of the surgical or anatomical neck,

CASE RECORDS OF THE MASSACHUSETTS GENERAL HOSPITAL

ANTEMORTEM AND POSTMORTEM RECORDS AS USED IN WEEKLY CLINICOPATHOLOGICAL EXERCISES

FOUNDED BY RICHARD C CABOT, M D

TRACY B MALLORY, M.D., *Editor*

CASE 25391

PRESENTATION OF CASE

First Admission A thirty-eight-year-old housewife entered complaining of abdominal pain

At the age of fourteen years she was ill for two or three months with what her physician believed to be either typhoid fever or tuberculous peritonitis At that time she had fluid in her abdomen, and her spleen was enlarged During the past eight years she had had indigestion, soreness in the lower abdomen, gaseous eructations, and heartburn About once every six months she had sharp pain in the epigastrium which was relieved by taking castor oil or by induced vomiting These attacks came on two or three hours after meals and lasted about two days She had had no tarry stools or hematemesis Four years prior to entry she rather suddenly became nauseated and vomited about one third of a large water pitcherful of dark-brown material There was no pain Two hours later she became unconscious for a short time and then vomited a "lot" of bright-red blood She passed tarry stools for two weeks, was very weak and remained in bed for seven weeks X-ray photographs were taken by her physician and a diagnosis of duodenal ulcer made She was put on a bland diet and after six months had regained most of her strength At no time did she have pain

Nine months before admission, although she had been feeling very well, she suddenly became nauseated, felt weak and perspired freely The following morning she noticed that her stools were black and they remained so for two or three weeks Two months later she had two successive hemorrhages, vomiting dark blood on the first occasion, bright-red blood on the second Each attack was preceded by nausea and weakness Following these she had severe abdominal pain over the left upper abdomen, right upper abdomen and right side It felt like a belt constricting her upper abdomen The pain usually began about 1 p m and lasted several hours, requiring morphine for relief

Six months preceding entry her ankles and lower back became swollen and soon her arms, hands, feet and abdomen were swollen, the abdomen being quite hard She took digitalis and after five or six weeks the edema entirely disappeared

One month before entry she felt much better but continued to have abdominal pain coming on early in the afternoon Three weeks later she had x-ray photographs taken which confirmed the diagnosis of chronic duodenal ulcer and enlarged spleen The liver was not enlarged During the past nine months she had lost 40 pounds No jaundice had been noticed Her bowel movements had been essentially normal except for the blood passed She had been exposed to tuberculosis Some shortness of breath on exertion and palpitation had been noted Her past and family histories were otherwise noncontributory

Physical examination showed a very anemic, emaciated woman with a rounded tense abdomen Some small axillary lymph nodes were palpable Examination of the chest was negative The blood pressure was 120 systolic, 90 diastolic The abdomen was tense and tender The liver edge was palpated at the costal margin A hard mass came from under the left costal margin and extended almost half way to the umbilicus A notch could be felt medially The edge was rounded and tender Rectal examination showed tender external hemorrhoids

The temperature was 99 2°F, the pulse 80, and respirations 20

The urine examination was negative The blood showed a red-cell count of 3,550,000 with 75 per cent hemoglobin, and a white-cell count of 3800 with 79 per cent polymorphonuclears, 20 per cent lymphocytes, and 1 per cent eosinophils The blood smear showed the red cells to be normal The coagulation time was 6 minutes in the first tube, 12 in the fifth Clot retraction was normal A blood Wassermann test was negative The serum non protein nitrogen was 25 mg per 100 cc. Three stool examinations were guaiac negative

A gastrointestinal x-ray series was negative except that there was slight spasm of the duodenum Retrograde pyelograms were negative though the left kidney pelvis appeared to be slightly lower than normal

On the third hospital day the blood showed a red-cell count of 4,300,000 with 65 per cent hemoglobin, and a white-cell count of 2700 Her condition remained essentially unchanged and she was discharged on the tenth hospital day

Second Admission (two weeks later) The patient had gained strength since discharge and returned for operation The blood red-cell count was 3,700,000, and the white-cell count 3800 On the fifth hospital day a laparotomy was done There was no free fluid in the abdomen The omentum was widely adherent to the anterior abdominal wall The spleen was exposed with difficulty and was found to be moderately en

larged and very adherent The liver and stomach were also buried in vascular adhesions. The duodenum could not be well exposed, but there was no obvious abnormality It was felt that nothing further could be safely done and the abdomen was closed She did well following operation and was discharged on the twenty-eighth hospital day

Third Admission (eight years later) Since the last admission the patient had gained 30 to 40 pounds and felt well until five days before reentry At this time she developed shingles" of the face and neck and took some pills given by her physician These upset her on the day before admission and the following morning she vomited a large amount of blood and dark-colored material.

Physical examination showed herpetic lesions and crusts over the right side of the face, neck and head Examination of the chest was negative The blood pressure was 95 systolic, 75 diastolic The abdomen was soft The spleen was palpable 4 cm below the costal margin and was firm The liver edge was just palpable on inspiration There was a well healed midline scar Rectal examination showed hemorrhoids

The temperature was 99°F., the pulse 80 and the respirations 20

The urine examination was negative. The blood red-cell count was 3,200,000 with 55 per cent hemoglobin, and the white-cell count 4600 with 87 per cent polymorphonuclears. The clotting time was 10 minutes in the first tube, 12 minutes in the fifth There was little or no clot retraction after 24 hours The bleeding time was 1½ minutes. A blood Hinton test was negative. A van den Bergh was too low to read Three stool examinations were guaiac positive

For the first three weeks in the hospital she ran a daily afternoon temperature of 100 to 101°F On the fifth hospital day her red-cell count was 1,890,000, with 40 per cent hemoglobin The platelets were greatly decreased The red cells showed moderate variation in size and shape but were well filled with hemoglobin She complained often of abdominal pain and distress Fifteen days later the blood white-cell count was 4300 She was given daily doses of ferrous sulfate On the thirtieth hospital day her blood showed 7.5 per cent reticulocytes, and 2,280,000 red cells She gradually improved, her temperature subsided and she was discharged on the thirty fifth hospital day

Fourth Admission (two years later) Nine months after discharge the patient had another episode of weakness and tarry stools Four days before entry she again had black stools and on the following day fainted when she arose to go to the bathroom On the day before entry she vomited red blood mixed with food particles. She had been taking digitalis for moderate dyspnea on exertion and in addition Blaud s pills

Physical examination showed no new findings The blood pressure was 120 systolic, 80 diastolic. The temperature was 99°F., pulse 88, respirations 20 The urine examination showed a large trace of acetone but was otherwise negative The blood showed a red-cell count of 3 700 000 with 60 per cent hemoglobin, and a white-cell count of 8100 with 79 per cent polymorphonuclears 15 per cent lymphocytes, 1 per cent eosinophils, 2 per cent young polymorphonuclears, and 3 per cent unclassified cells There was 4.9 per cent reticulocytes The red cells showed moderate achromia, considerable variation in size and shape. There were rare stippled cells and a rare macrocyte

The patient continued to pass blood by rectum and on the ninth hospital day the red-cell count was 1,800,000, the reticulocytes 8.9 per cent She slowly improved and was discharged on the thirty seventh hospital day She had received one blood transfusion and 12 grains of ferrous sulfate daily

Final Admission (three years and three months later) Since the last admission she had been reasonably well and active and her weight had remained constant at 136 pounds She bruised easily, hypodermic injections causing large ecchymoses For the past year her ankles had shown pitting edema Two years and again one year before entry she had repeated hematemeses Thirty six hours before admission hematemesis recurred and she vomited blood almost every hour until entry

Physical examination showed an acutely ill restless woman The skin had a slightly icteric tinge. The chest was essentially negative The blood pressure was 60 systolic, 40 diastolic. The spleen and liver were just palpable

The temperature was 101°F., the pulse 120 and the respirations 20

The blood showed a red-cell count of 2,100,000 with 50 per cent hemoglobin She was given two transfusions of blood, one of 500 cc. and the other 1000 cc

She rapidly failed, however, and died on the second hospital day

Differential Diagnosis

Dr William B Breed The history tells us that between the ages of fourteen and thirty this patient had been entirely well. The existence of such a period of freedom from symptoms is to be doubted if we are to believe that the first illness was the initial appearance of the present fatal condition, and the presence of ascites and

splenomegaly at that time certainly indicates that such was the case Eight years prior to admission she was symptom free except once every six months when she had sharp pain relieved by taking castor oil During the last four years her attacks were associated with hemorrhage

"She had been exposed to tuberculosis" I do not know how much emphasis to place on that

DR TRACY B MALLORY A maternal grandfather died of tuberculosis Nothing is said about the duration of the contact

DR BREED Of course, both such observations (ascites and splenomegaly) are difficult to be certain of, particularly in a child My experience has been that it is most difficult to be sure of the presence of both an enlarged spleen and ascites in the same patient However, we have to assume that she did have both at the age of fourteen because it is written into the record If that is the case, then it seems unnecessary to believe that at the age of thirty she should begin to have bleeding due to a duodenal ulcer unless we have to make two diagnoses If you look down over this record I think the diagnosis of duodenal ulcer is not clearly substantiated We hear twice that an x-ray photograph confirmed the diagnosis of ulcer Then we later find in this hospital only slight spasm of the duodenum which is certainly not enough for such a diagnosis and her story is not really one of duodenal ulcer Moreover, she is a woman, and this reduces further the chances of her having duodenal ulcer So I am ready to eliminate ulcer as a possibility

We do not know whether or not she had an enlarged spleen during all these sixteen years I am going to assume that she probably did, and this splenomegaly marked the beginning of her illness If the spleen was enlarged, what was the cause? My first thought would be thrombosis of the splenic vein with beginning of so-called Banti's syndrome It is true that it is less common in women than in men, but the patient is of the right age It does begin in the adolescent period, and it does have periods of remission I know of no other condition that would last from the age of fourteen through to fifty-one years, her age at the final admission I hope Dr Mallory will help us in our point of view about the classification of the splenomegaly With a disease lasting as long as this has, and starting at the age of fourteen, one has to consider Hodgkin's disease, and amyloid disease, if she had tuberculosis I cannot believe that we have to include aleukemic leukemia, because of the duration In the face of the fact that she had no x-ray treatment one would hesitate to make a diagnosis of Hodgkin's disease or any of the serious malignant diseases of the spleen or bone marrow There is, of course, the giant follicular type of malignant lymphoma, which is benign and lasts a good many years

DR MALLORY The longest duration we have seen in that condition is fourteen years

DR BREED That does not really fit into that category either, and so I keep coming back to the so-called Banti's syndrome which is represented by two points of view, one that there is an underlying cirrhosis to begin with, the other that there is a primary splenic thrombosis which produces esophageal varices Even though we could not find them by x-ray study I suspect that she bled from a varix rather than from a peptic ulcer, for which we have no good evidence Certainly we know if she had duodenal ulcer that she had two conditions

I should like to comment about the swelling of the arms and legs and then note, "She took digitalis and after five or six weeks the edema entirely disappeared" I want to go on record as saying that the digitalis played no part in relieving her of edema I think it was probably nutritional and that she had no heart or kidney disease

Although they looked into the abdomen on the operating table, we do not know much more than we did before I question very much if the surgeon who operated was able to make a definite diagnosis He could merely observe the physical findings, namely, adhesions and a moderately enlarged spleen, and ascites I suppose he did not take the spleen out because of the mechanical difficulty Is that correct?

DR MALLORY Yes

DR. BREED Would it be possible for a person to make a diagnosis by inspection at operation? Would what is described here lend any support to tuberculous peritonitis?

DR MALLORY It is consistent with healed tuberculous peritonitis acquired at the age of fourteen

DR BREED I am still not willing to call it tuberculosis with amyloid spleen

I assume that she had no bleeding for eight years, and that she felt well Then she developed herpes zoster and had a hematemesis I do not believe that the herpes is important

She presented no skin manifestations of so-called thrombocytopenic purpura at this time (fourth admission) One would think if this were the ordinary purpura hemorrhagica, that one would by this time have found some evidence in the skin Later on there was some suggestion of it, but I think that it was not a primary lesion

I do not believe she had a clear-cut disease I

think that she had had a syndrome for many years which consisted mainly in the persistence of splenomegaly and bleeding from the gastrointestinal tract with, toward the end, some secondary anemia and purpura. The reports of the blood smear do not indicate that this is a primary blood dyscrasia. The anemia was presumably a result of recurring hemorrhage. The whole process was essentially a mechanical lesion due to thrombosis of the splenic vein and varices that bled from time to time, even though they were not shown by x-ray film. I think she did not have a duodenal ulcer.

A. PHYSICIAN. Is this spleen unusually small for a Banti's syndrome?

DR. BREED. It is hard to tell how big it was. The only sound evidence that we have of its size is the comment of the surgeon who said it was moderately enlarged. There was a time when it was quite prominent on physical examination and the notch was felt.

DR. MALLORY. There is one point that may well be brought out at this moment. Spleens are variable in size. The spleen after all is like a sponge which serves as a reservoir for blood cells, and any patient who has had a recent severe hemorrhage is apt to have significant shrinkage of the spleen. On most of the subsequent admissions she came in immediately following a hemorrhage. If we had seen her before rather than after these hemorrhages it is possible the spleen would have been much more readily felt.

DR. BREED. I am not going to comment on this point, but I am going to stick to Banti's disease as the essential diagnosis here unless someone has some clear point of view that will discourage me.

DR. MALLORY. I should like to put some figures on the board of the white-cell count over the last fourteen years and ask you about them. Dr. Breed.

ADMISSION	WHITE BLOOD-CELL COUNT
First	3900
	2700
Second	3800
Third	4600
	3900
	7500
Fourth	5400
	4000
	8100
Fifth	2,000 (1 hour after hemorrhage)
	6700
	5200

DR. BREED. The point you are trying to emphasize is the persistent leukopenia, and the question whether she had aleukemic leukemia?

DR. MALLORY. What do you think? Do you consider this consistent with leukemia?

DR. BREED. I think one may have leukopenia associated with Banti's syndrome. I quite agree that the white count is low and I think that array of figures is impressive, but she went twenty-one years with no x-ray treatment and no abnormal cells in the smear. They did mention some axillary nodes at one time which might suggest Hodgkin's disease, but I am not familiar with persistent recurring gastrointestinal hemorrhages commonly associated with Hodgkin's disease over a long period of time. I cannot bring myself to think that this is a primary blood dyscrasia in spite of the persistent leukopenia.

A. PHYSICIAN. At the time of the 2700 white count there were four million red blood cells.

DR. MALLORY. The red count was two and a half to four million throughout the whole period. It never got up to normal.

I am trying to give Dr. Breed support for his diagnosis, although he appears not to know it.

In going over this story I was greatly impressed by this series of white counts. Although a laboratory examination never makes a diagnosis this persistent leukopenia is certainly most suggestive, and the further fact that at all these admissions the differential count was normal, makes a diagnosis of Banti's disease almost certain. I would start looking for any history that might confirm this, and that which Dr. Breed has worked out for you is correct. We have the two factors both pointing in the same direction. All that makes it a rather strong case.

DR. BREED. To be perfectly honest with you this impressive list of low counts did not at first impress me.

CLINICAL DIAGNOSES

Thrombophlebitis, portal vein with splenomegaly.
Cirrhosis of liver (portal).
Ruptured esophageal varix with hemorrhage.

DR. BREED'S DIAGNOSIS

Thrombophlebitis of splenic vein with splenomegaly (Banti's syndrome).

ANATOMICAL DIAGNOSES

Thrombophlebitis, organized, of splenic, superior mesenteric and portal veins.
Splenomegaly.
Cirrhosis of liver, portal, minimal.
Esophageal varices.
Massive hemorrhage into gastrointestinal tract.
Peritonitis, chronic adhesive, generalized.
Tuberculous adenitis, mediastinal.
Cholecystitis, chronic.
Cholelithiasis.

PATHOLOGICAL DISCUSSION

DR. MALLORY. It seems to me that persistent leukopenia is rarely paid the attention it deserves

DR. ADAMS She had changes in the kidney?

DR. MALLORY Several small infarcts were found in the kidneys grossly and a few microscopic ones

DR ADAMS Did you form an opinion as to the ulcer on the nose?

DR MALLORY No

DR ADAMS What is the usual picture of tuberculosis of the genital tract? Could she have tuberculosis of the genital tract which might ulcerate into the gastrointestinal tract, the reverse of this picture?

DR MALLORY Usually tuberculosis of the genital tract is of the so-called hyperplastic type, most marked in the tubes though it may be fairly extensive in the endometrium I cannot remember seeing it involve the cervix and I cannot remember seeing any case with ulceration into the rectum

A PHYSICIAN Is it common to find ulcerative colitis going through the rectal vaginal septum?

DR MALLORY No, not common but there is no reason it should not occur A significant number of cases of ulcerative colitis eventually develop perforation of the bowel A great many patients with ulcerative colitis, moreover, develop extensive fistulas and ulcerations around the anus, and I do not think it surprising that the vagina should be involved

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PRENATAL BLOOD TESTS

The passage of the recent law, a copy of which appears elsewhere in this issue of the *Journal* requiring a blood test for syphilis on every pregnant woman places a heavy responsibility on every individual physician in this state who accepts an obstetric case. This responsibility is intensified by the fact that the medical profession is placed on its honor, so to speak, in view of the fact that no penalty is provided in case of failure to carry out the test. At the same time no law should have been required to make this procedure compulsory, although such a step can be construed as a part of the educational program in syphilis. All physicians should know that the value of such tests in the detection of syphilis in mothers and the prevention of congenital syphilis has been amply demonstrated, however, this knowledge deserves wide distribution. The detection and adequate treatment of infected mothers before the fifth month have practically prevented syphilis in the child and some treatment even in the last few months of pregnancy has been shown to increase the proportion of healthy babies. It has, therefore, been rightly said that risk of treatment is so slight and the benefit so great that the withholding of arsphenamine in the last months of pregnancy amounts to little less than gross negligence.[1] The absence of early, active congenital syphilis from the teaching clinics where routine serological examinations have been made is practical proof of such procedure. Further confirmation is found in a recent ten-year study[2] of 35,000 pregnant women in the Los Angeles Maternity Service, of whom 2.04 per cent were found to have syphilis, in the 500 women with syphilis who could be adequately followed, only 6 syphilitic infants were born to those mothers who had had more than ten arsenic and ten bismuth injections.

The responsibility of the physician does not end with the taking of the blood and its shipment to the laboratory, for him the interpretation of the report is just as important. Every positive serological test does not mean syphilis, nor do all patients with syphilis have a positive reaction. It is unfortunate that such great emphasis has been placed on the test in prenatal and premarital laws and so little on the physical examination. Every positive report requires rechecking once, twice or more for confirmation, requires careful physical examination by a physician who is willing to make such an examination, and requires careful investigation of the patient's history and the history of her husband and their children, as well as that of her parents and siblings for possible evidence of congenital syphilis in herself. If a positive diagnosis is made, treatment should be continued throughout the pregnancy, unless definite contraindications exist. Following adequate therapy the child will in all probability be protected, but should be checked and watched for at least two years. The mother's treatment should be continued to fulfill the requirements of her particular case.

Preventive medicine has made another conquest Control over diphtheria, typhoid fever, malaria, yellow fever and other diseases has been demonstrated, and to the list is added congenital syphilis, with the co-operation of potential mothers and the medical profession it is completely preventable Truly the responsibility of the physician grows apace as the world and medicine march on!

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HOLMES OF THE BREAKFAST-TABLE

A SHORT, readable life of Oliver Wendell Holmes, Boston's beloved doctor and poet, forms a welcome addition to the literature of medical history There has been no volume of considerable extent in regard to Holmes since the *Life and Letters,* by John T Morse, Jr, published in 1896 Mr M A DeWolfe Howe,* well known to all Bostonians for his eminence in letters, has now written a short but delightful life of Holmes, in which one can find not only a splendid summary of Holmes's literary contributions but also an estimate of the value of his medical work

Shortly after graduating from the Harvard Medical School, Holmes made two important contributions to medicine his famous address on "Homoeopathy, and its Kindred Delusions" in 1842 and his even more important paper on "The Contagiousness of Puerperal Fever" in 1843 The latter paper was not widely known until reprinted in 1855 under the title, "Puerperal Fever as a Private Pestilence" This is, without question, Holmes's most important single contribution to medicine, and as such, Mr Howe has given it ample recognition Subsequently Holmes gave the words "anesthesia" and "anesthetic" to the world, and during his long tenure of office as professor of anatomy at the Harvard Medical School, he made important contributions to our knowledge of the microscope In addition, Holmes made many other contributions of a lesser character to medicine His essay on "Acute Pericarditis," ten as a dissertation for the degree of doc medicine at the Harvard Medical School in has only recently been published by the Bibliophilic Society (1937)

When his son, later Justice Oliver W Holmes, was injured in the Civil War, Dr H went in search of "the Captain," who was wounded and was cared for by Dr William of Philadelphia Recently the Boston Medic brary has acquired two letters from Holm Dr Hunt The first, dated 1861, is print Mr Howe and gives an excellent idea of Ho difficulties in bringing his son back to B where Dr Bigelow could look after him second, thirty years later, in 1891, recalls Dr H kindness to "the Captain," and Holmes, i characteristic way, wrote "I remember your offices during the war when my son came with two new button-holes in his congenital coat I thanked you then I thank you Your patient is now a justice on the Su Bench of Massachusetts" There are other dotes in Mr Howe's book that will delight cians in general The whole biography, mor is a sound summary of Oliver Wendell Holme as such should be read by every physician historical interests

*Howe M A DeWolfe *Holmes of the Breakfast Table* 172 pp London and New York Oxford University Press 1939

MASSACHUSETTS MEDICAL SOCIET

SECTION OF OBSTETRICS AND GYNECOLOGY*

RAYMOND S TITUS, M D, *Secretary*
330 Dartmouth Street
Boston

SEPTIC ABORTION — DEATH

Mrs E S, a nineteen-year-old para II, e the hospital on July 1, 1911, complaining of in the lower abdomen, chiefly on the right of four days' duration She had experience eral chills, followed by fever and some naus

Her last menstrual period had been on 9 so that she was just about eight weeks preg She was flowing very little

*A series of selected case histories by members of the section published weekly Comments and questions by subscribers are and will be discussed by members of the section

The family history was not obtained. Her past history was uneventful She had had one full term normal delivery with apparently normal pregnancy and puerperium

Physical examination showed a well-developed woman who looked definitely sick The tongue was moist, covered with a white coat The pharynx was somewhat reddened. The temperature was 102°F., pulse 128 and respirations 22. There was a loud blowing systolic murmur over the precordia not transmitted elsewhere. The lungs were uniformly resonant with clear respiration The abdomen was generally tender with spasm present in both lower quadrants There was more tenderness and spasm in the right lower quadrant

On vaginal examination there were found a markedly reddened urethra multiparous perineum and a moderate bilateral laceration of the cervix The cervix was soft and the uterus appeared to be enlarged to a size corresponding to a three month pregnancy In the tender right vault a questionable mass was felt.

The white blood count was 16 000 The urine was cloudy, the specific gravity was 1 024 and there was present a slightest possible trace of albumin, but no sugar The sediment showed numerous pus cells, some red blood corpuscles and numerous epithelial cells.

On the following day the patient passed by vagina a mass which was definitely placental tissue. She then admitted the use of medicine to bring on an abortion but denied instrumentation

The attending obstetrician felt that the uterus should be emptied at once, so without anesthesia the cervix was dilated and the uterus curetted of a large amount of the products of conception A culture was taken which showed a mixed growth with staphylococci predominating The uterus was washed out with salt solution and packed with a gauze strip soaked with tincture of iodine. Following this procedure, the patient's pulse became rapid and thready The rate varied between 150 and 160 The abdomen became distended, tender and rigid The patient vomited copiously Her condition became steadily worse and she died early the following morning

Comment This is a typical case of septic abortion and shows how all such cases were treated twenty five years ago The history makes no particular mention of hemorrhage, the patient did not complain of it, nor does the record mention it. Today upon entrance if bleeding were not marked, a culture would be taken from the uterus, a blood culture would be obtained and the uterus left alone. The uterus would not be curetted today in the absence of hemorrhage Twenty five years ago a rigorous curettage was the accepted form of treatment and the results too often in truly infected cases followed the course of this particular one. Conservatism in the absence of hemorrhage should dictate all treatment. The invasion of the uterus to remove material which is the indirect cause of the bleeding should be undertaken gently, the purpose being to remove material so that the uterus may contract and the sinuses close Sulfanilamide in cases of streptococcal infection has often proved curative.

It is also perfectly possible that this abortion may have been stimulated by artificial means and, had the patient presented herself sooner and conservative treatment followed, this tragic outcome might have been averted.

PRENATAL BLOOD TEST LAW

The following is a transcript of the amendment, recently passed by the Legislature, which specifies that the bloods of all pregnant women shall be tested for syphilis The bill (House 2265) was signed by the Governor on August 3, and will become effective on November 1

AN ACT REQUIRING A SEROLOGICAL TEST FOR SYPHILIS OF PREGNANT WOMEN

Chapter one hundred and eleven, section five, of the General Laws is hereby amended, by inserting after section 121 as appearing in the Tercentenary Edition the following new section

Section 121A A physician attending a pregnant woman in this commonwealth during gestation shall take or cause to be taken a sample of blood of such woman at the time of first examination, and shall submit such sample for a standard serological test for syphilis to a laboratory of the Department of Public Health or to a laboratory approved for this test by the department provided, that not more than one physician attending such a pregnant woman during gestation shall be required to comply with the provisions of this section.

DEATH

WILKINSON—WILLIAM D WILKINSON M D of *Boston* died September 23. He was in his forty second year

Dr Wilkinson received his degree from the Middlesex College of Medicine and Surgery in 1978 He was a member of the Massachusetts Medical Society and the American Medical Association.

MISCELLANY

THE RELATION OF THE PHYSICIAN TO THE TUBERCULOUS PATIENT

Having noticed that patients who were not receiving collapse therapy left the sanatorium prematurely (signed a release) with far greater frequency than those who did receive collapse Dr Kruger of the Hudson County Tuberculosis Hospital attempted to find the reasons for their apparent dissatisfaction And with a knowledge that a

goodly number of patients who sign a release return to the sanatorium later with their lesions much more advanced in extent, he attempted to create a better understanding of every patient so that they would be less inclined to leave the sanatorium before they should His paper (The relation of the physician to the tuberculous patient, *J A M A* 112 2123–2126, 1939) may be summarized as follows

Three reasons account for the self-discharge of patients not receiving collapse surgery a feeling of well-being, conditions at home requiring their return to work, the patients lack of appreciation of the importance of bed rest in the treatment of tuberculosis and their lack of education regarding the advantages of the sanatorium or hospital

Many patients admitted to the sanatorium are not acutely ill and except for a slight cough or a sudden hemoptysis were not aware that they were ill Mass tuberculin testing has revealed many cases of tuberculosis that are entirely asymptomatic. The news is generally received with some degree of shock, especially by those who think of tuberculosis as "consumption' and who are not aware of what can be done therapeutically The way a person reacts to the knowledge that he has tuberculosis and will have to remain in a sanatorium for a long time depends on three factors his inherent characteristics, whether his tendency is toward an introvert or extrovert type, his station in life at the moment and his responsibilities, such as the support of a family

Extroversion may be defined as the turning of an interest outward toward some object. Introversion is the contemplation of one's own thoughts and feelings Tuberculous patients can hardly be rigidly classified into these two groups, but in each individual is the tendency to lean toward one or the other and when an individual develops tuberculosis that tendency becomes more manifest The neurasthenic manifestations encountered in tuberculous patients are not specific but are frequently seen in individuals with any protracted illness The physician dealing with tuberculous patients must adjust and adapt them to their illness as close to the point of contentment as is possible, instilling in them the hope and certainty that they will soon recover and return to their former usefulness to society The patient confined to a bed rest regimen for a number of months must be made to believe in the need for such treatment.

The extrovert is characteristically carefree and unconcerned about his condition The problem that confronts the physician is to gain the confidence of this patient and to explain the need for prolonged treatment if he is to make satisfactory progress Occasionally one will encounter a patient who does not adequately appreciate the necessity of intensive treatment. Here one must be frankly outspoken and attempt to show what may happen if he fails to heed the physician's advice. The patient must be made to realize that he is a sick person in spite of his apparent well-being He must be convinced of the fact that tuberculosis, when discovered early, may be easily controlled, whereas, when the disease is of a more advanced type, it is more difficult to obtain a satisfactory result. In order to obtain the full co-operation of the patient, it is essential that he be advised concerning the development and progress of the disease through the medium of education The physician in charge must make an indelible impression on his patient.

It is with the introvert that we must use the greatest of discretion He has kept his troubles to himself, for his best defense has been to keep them hidden It is this type of individual that should be prevailed on to share his innermost thoughts with the physician He must not be allowed to become depressed, for a happy patient with a happy, healthy state of mind is a most desirable asset in fighting a chronic disease such as tuberculosis On the other hand, the practice of minimizing a patient s lesion, such as diagnosing an infiltrate as a "bronchitis" so as to avoid any embarrassment" to the patient, is to be condemned Too often patients are seen who state that their physician, several months prior to admission, told them that they had a 'little bronchitis" or a "tiny spot on the lung" and advised only a couple of weeks' rest in bed However, in a certain few select cases it may be perfectly justifiable to minimize somewhat the extent of the process Those patients who are apprehensive and worried about themselves must be reassured and convinced that their trouble is not too far advanced and that with time they will recover An attitude of optimism must be assumed by the doctor and imbued in the patient The mere mention of the word "cavity" may cause them to become panicky and apprehensive.

When making staff rounds it is best not to discuss the case in front of the patient, except in the form of encouragement. The patient will listen intently and will invariably misinterpret every statement. The physician should devote as much time as possible to obtaining a sympathetic understanding with the patient and discuss at length any problem that may be brought up, no matter how trivial it may seem He should be encouraged to keep interested in the news of the day The widespread use of the radio is endorsed, its effects on the well-being of the patients have been so encouraging that in the new Hudson County Tuberculosis Hospital, every bed is supplied with an individual ear-set, so that a patient may have the choice of listening to one of four different programs without in any way interfering with the other patients in the ward

When pneumothorax is attempted and fails, the patient will become despondent, feeling that his only hope for recovery is lost. To obviate this apparent setback one must explain that pneumothorax is merely an adjunct in the treatment, that the patient will improve with bed rest alone, but that if pneumothorax is successful it will help rest the lung a little more and tend to hasten recovery

One has to contend with patients wanting to be discharged because they feel they can continue bed rest at home. This is not true. The majority of those who sign a release become careless and soon have to return because of reactivation of the lesion With this group the physician must stress the dangers involved, frankly and outspokenly Citing as an instance an individual, known to the patient, who having refused advice has had to return with an advanced lesion, often helps him to comprehend the significance of his intentions

One thing must be emphasized to all tuberculous patients, that rest means not only physical rest but also mental rest. The object of physical rest is to diminish the work of the lungs by diminishing the number and extent of the respiratory excursions Yet, what good is such physical rest if the patient maintains a state of high nervous tension as seen in the neurasthenic type of individual? It is not infrequently noted that patients with an extensive pulmonary involvement who are cheerful and mentally stable show a favorable progress

The tuberculous person must be shielded from the cares and responsibilities of home and business Friends and members of the family must be cautioned against bringing any news to the patient which may in any way disturb him For that reason, sanatorium care for the

patient is the desirable thing whenever feasible, for here the individual is more or less isolated from home influences, which although well meant, are not always to the patient's best interests, and in addition he is under constant supervision with the knowledge that he is in the same hospital with a number of others similarly afflicted and all having the same goal Also from a public-health standpoint, his chances of spreading his infection are minimized.—Reprinted from *Tuberculous Abstracts* (September 1939)

NOTE

Dr Leonard Carmichael president of Tufts College, was recently elected president of the American Psychological Association He succeeds Dr Gordon W Allport, assistant professor of psychology at Harvard University

Dr Carmichael was previously professor of psychology at Brown University and at the University of Rochester

NOTICES

ANNOUNCEMENT

David H. Gersh M.D., announces the opening of an office at 1194 Massachusetts Avenue, Arlington.

REMOVAL

S Richard Muellner, M.D., announces the removal of his office to 520 Beacon Street, Boston

BOSTON DOCTORS SYMPHONY ORCHESTRA

The Boston Doctors Symphony Orchestra will resume rehearsals October 19 at Brandon Hall Hotel 1501 Beacon Street, Brookline. These rehearsals will be held every Thursday at 8.30 p.m. Those interested in becoming members should communicate with Dr Julius Loman, Pelham Hall Hotel Brookline (BEA 2430)

FAULKNER HOSPITAL CLINICOPATHOLOGICAL CONFERENCE

The monthly clinicopathological conference of the Faulkner Hospital will be held on Thursday October 5 at 5:00 p.m. There will be a discussion of cases by Drs. F G Balch, Jr and M. B Strauss.

Physicians and all other members of the medical profession are cordially invited to attend.

CONSULTATION CLINICS FOR CRIPPLED CHILDREN IN MASSACHUSETTS UNDER THE PROVISIONS OF THE SOCIAL SECURITY ACT

Clinic	Date	Orthopedic Consultant
Salem	October 2	Harold C. Bean
Haverhill	October 4	William T Green
Lowell	October 6	Albert H. Brewster
Gardner	October 10	Mark H. Rogers
Pittsfield	October 16	Francis A Slowick
Northampton	October 18	Garry deN Hough Jr
Brockton	October 19	George W Van Gorder
Worcester	October 20	John W O'Meara
Fall River	October 23	Eugene A. McCarthy
Hyannis	October 24	Paul L. Norton

SOCIETY MEETINGS AND CONFERENCES

Calendar of Boston District for the Week Beginning Monday October 2

Monday October 2

4 p.m. Physicians and medical student are cordially invited to attend a clinic presented by the medical surgical and orthopedic services of the Infants' and Children's hospital the amphitheater of the Children's Hospital

Tuesday October 3

10 a.m.–12:30 p.m. Boston Dispensary tumor clinic.

7:30 p.m. Greater Boston Medical Society University Club, Boston

Wednesday October 4

12 m. Clinicopathological conference Children's Hospital Amphitheater

Thursday October 5

5 p.m. Faulkner Hospital clinicopathological conference.

Friday October 6

10 a.m.–12:30 p.m. Boston Dispensary tumor clinic

12 m. Urological conference the Massachusetts General Hospital, lower amphitheater Out Patient Department

Saturday October 7

10 a.m.–12 m. Staff rounds of the Peter Bent Brigham Hospital Conducted by Dr Soma Weiss

Open to the medical profession

September 29–30 — New England Surgical Society Beverly and Salem

October 3 — Greater Boston Medical Society Page 480 issue of September 1

October 5 — Faulkner clinicopathological conference. Notice box

October 13 — Pentucket Association of Physicians. 8:30 p.m. Hotel Bartlet Haverhill.

October 15–20 — American Public Health Association. Page 441 issue of September 14

October 23–November 3 — New York Academy of Medicine. Page 977 issue of June 8.

November 8–9 — New England Society of Physical Medicine, in conjunction with the Academy of Physical Medicine Hotel Kenmore Boston. Program to be announced.

December 2 — American Board of Obstetrics and Gynecology Page 1019 issue of June 15

January 6, Iowa 8–11 1940 — American Board of Obstetrics and Gynecology Page 160, issue of July 27

March 7–9 1940 — The New England Hospital Association Hotel Statler Boston.

May 14 1940 — Pharmacopoeial Convention. Page 894 issue of May 25.

June 7–9 1940 — American Board of Obstetrics and Gynecology Page 1019 issue of June 15

District Medical Society

SUFFOLK

November 2 — Censors meet Page 441 issue of September 14

BOOKS RECEIVED FOR REVIEW

Diseases of the Skin Richard L. Sutton and Richard L. Sutton Jr Tenth edition. 1549 pp. St. Louis C. V Mosby Co., 1939 $15.00

Pathogenic Microörganisms A practical manual for students physicians and health officers William H. Park and Anna W Williams. Eleventh edition. 1056 pp. Philadelphia Lea & Febiger 1939 $8.00

The Story of Surgery Harvey Graham. 475 pp. New York Doubleday Doran & Co., Inc., 1939 $3.75

Tests of Mental Development A complete scale for individual examination F Kuhlmann. 314 pp. Minneapolis, Nashville and Philadelphia Educational Publishers, Inc., 1939 $2.00

Maternal Care and Some Complications The principles of antepartum intrapartum and postpartum care and of the management of some serious complications Edited by F L. Adair 194 pp. Chicago University of Chicago Press, 1939 $1.50.

Practical Obstetrics P Brooke Bland and Thaddeus L. Montgomery Third revised edition 877 pp Philadelphia F A Davis Co, 1939 $8 00

Anatomy and Physiology Frederic T Jung, Anna R. Benjamin and Elizabeth C Earle 637 pp Philadelphia F A Davis Co, 1939 $3 50

International Health Division Annual report, 1938 233 pp New York The Rockefeller Foundation, 1938

Office Gynecology J P Greenhill. 406 pp Chicago The Year Book Publishers, Inc., 1939 $3 00

A Handbook of Elementary Psychobiology and Psychiatry Edward G Billings 271 pp New York The Macmillan Co, 1939 $2 00

BOOK REVIEWS

An Introduction to Sociology and Social Problems A text-book for nurses Deborah M Jensen 341 pp St. Louis C V Mosby Co, 1939 $2 75

The average person erroneously thinks of a sociologist as a rather naïve and well intentioned social reformer or even as a socialist. Actually a sociologist is a student of social processes, of development and change in institutions, a student of social groups He is naturally also interested in social problems because they thwart human needs which social institutions grow up to serve. The sociologist seeks new knowledge about society, attempts to understand it with the hope that ultimately rational beings may be able to control social processes more intelligently in order to place social science at the service of man He is not a reformer, though as a private citizen he may be interested in several reforms But his purpose in life is not "to upset the apple cart." Just as the physician attempts to understand, prevent and control disease and aims to think straight about fundamentals of etiology, diagnosis, and prognosis, so the scientific student of society follows, or tries to follow, exactly the same principles

This textbook on sociology and social problems for nurses has been written by a former assistant director of the School of Nursing at Washington University It is intended to straddle two courses — to be useful both in an introductory course and in one on social problems

In a crowded curriculum for nurses there is need for a clear, brief statement of fundamentals This book will probably fulfill that need However one can only regret that it has been put together so much by the scissors-and-paste method There are too many long, quoted passages from other texts, about half the book being so constituted One quoted passage (pp 158-176) is over 18 pages long! This is milking the cow to the point of emaciation However, the passages quoted are, on the whole, well chosen and from generally accepted books, and because of this the text should give the student a good conception of the general range of material considered under the subjects in the field man's social nature and the development of personality, collective behavior, the community, the family, social change, social problems, the individual's reaction to illness, and the range of social problems in the modern community After a discussion of each major topic there is a brief treatment of the application of this knowledge to the needs of nurses

The style is quite uninspired — sometimes very awkward, occasionally grammatically incorrect. But, on the other hand, the scope is broad, and the meaning usually clear This text sticks to fundamentals It is unfortunate that the author has [illegible]

Do You Want to Become a Doctor? Morris Fishb 176 pp New York Frederick A Stokes Co, 1 $1 50

This book contains a concise presentation of the vari steps in medical education, a description of m schools and a consideration of state-board examinat internship and hospital systems It is well written contains data that should be at the fingertips of physicians The book is to be recommended not o prospective medical students but to medical stu themselves, to their teachers and to those alrea ly practice. The information is well organized and s r in general the whole present-day field of medicin scribing in detail the several stages of academic pr tion and offering much practical advice. The essenti of a good medical school are defined, and the com tive costs of education under varying circumstances presented The final chapter covers medical orga tions and their relation to society

Manual of Toxicology Forrest R. Davison 241 New York Paul B Hoeber, Inc., 1939 $2 50

A pocket-size manual must necessarily show care in selection of essential information. This book gives notes over a broad field in a manner which should be venient for the practicing physician or student, since ple descriptions of methods and tests of toxicolog analysis tend to bridge the gap between the problem the physician and the work of the toxicologist.

For the purpose intended, — to provide a concise convenient reference of basic knowledge useful to physician, — the book seems to be well planned. It sh not be confused with texts planned primarily fc toxicologist.

The Physiology of Exercise A text-book for stude physical education James H McCurdy and L A Larson Third edition, thoroughly revised 3 Philadelphia Lea & Febiger, 1939 $3 75

This book is written by two men who have att high standing as teachers in this field and have a thor knowledge of the subject.

The book is divided into three parts The first with the general effects of exercise on bodily funct This is primarily concerned with data relative to rate, blood pressure, respiration and neuromuscul action following various forms of exercise. The considers in detail the changes in bodily functi companying various athletic feats — from footba marathon running to golf, mountain climbing and ics There is also an interesting and instructive c inserted on "Physical Education for Women," and a on "Muscular Exercise for People Over Forty Ye Age" The third concerns methods of indicating effi of bodily functions and discusses the physiology large number and variety of laboratory and clinical of bodily ability, including the cardiovascular test de by one of the authors Each chapter is followed comprehensive bibliography totaling in all over references

This book was written as a "textbook for stude physical education" but lacks the easy uninterrupted ing of a good textbook. It is rather a book for ref and is so complete that it is difficult to detect the sion of any subject coming within its scope. Th terial is exceptionally well arranged, and the boo undoubtedly prove to be valuable for the student